Eremophila willsmithii Edginton (Scrophulariaceae), a new species from south-western Queensland, Australia

M.A. Edginton[1]

Summary

Edginton, M.A. (2024). *Eremophila willsmithii* Edginton (Scrophulariaceae), a new species from south-western Queensland, Australia. ***Austrobaileya* 14: 1–11.** *Eremophila willsmithii* is described and illustrated. Notes on ecology and distribution are provided. The known distribution of the new species is restricted to the vicinity of Eromanga.

Key Words: Scrophulariaceae; Myoporaceae; *Eremophila*; *Eremophila willsmithii*; flora of Australia; flora of Queensland; taxonomy; new species; Eromanga

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Introduction

The genus *Eremophila* R.Br. is widespread throughout Australia (centres of diversity and endemism are primarily semiarid and arid areas), with Western Australia having the most species (Chinnock 2007). Traditionally, *Eremophila* was placed within Myoporaceae; however, a review by Tank *et al.* (2006) of molecular phylogenetic studies supported the inclusion of the family within Scrophulariaceae with reduction to tribal status (Tribe Myoporeae). Recent molecular studies of Myoporeae using nuclear ribosomal and plastid DNA sequence data (Fowler *et al.* 2020; Fowler *et al.* 2021; Gericke *et al.* 2021) have indicated that the non-*Eremophila* genera in Myoporeae are nested in *Eremophila*, and that the sections of *Eremophila sensu* Chinnock (2007) are paraphyletic.

There are currently 233 recognised species of *Eremophila* (Australian Plant Census 2023). Since Chinnock's 2007 revision, many phrase-named taxa have been proposed and the species being described here has been recognised as distinct for 10 years (Edginton 2013), although it was first collected in 1997.

Material and methods

This study is based upon the examination of dried herbarium material and label data from the Queensland Herbarium (BRI), as well as photos of plants in habitat. All existing specimens of *Eremophila willsmithii* were examined. No spirit material has been collected, although floral parts were rehydrated to facilitate drawing and photographing. All photographs in the field were taken by J.L. Silcock. All photos of dried material were taken by the author, apart from the type specimen courtesy of M. Fabillo.

Taxonomy

Eremophila willsmithii Edginton, **sp. nov.**

A shrub or small tree, with foliage that is glabrous, non-resinous; stems that are tuberculate with tubercules becoming obscure with age; leaves that are alternate and scattered, mostly lanceolate to elliptic. It has 1–3 flowers per axil, with a ± zygomorphic deep pink or lilac to red corolla. The corolla upper lip has 2 obtuse to sub-acute lobes, while the lower lip has 3 obtuse to sub-acute lobes. The stamens are in 2 pairs, 1 pair not or barely exserted beyond the

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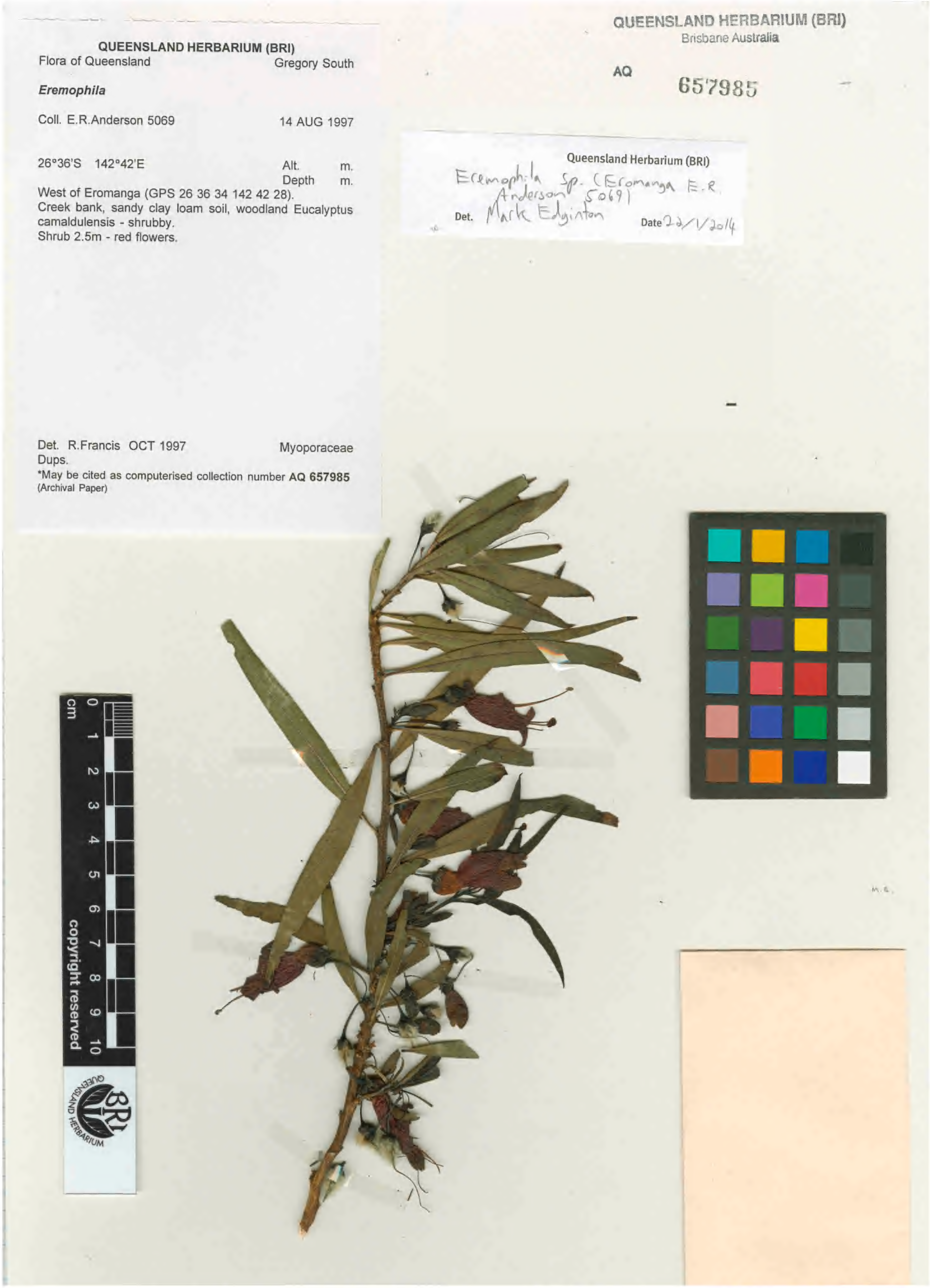
petals, the other pair exserted well beyond. Fruits are conical-ovoid to cylindric-conical, moderately pubescent with up to 1 mm long eglandular hairs and sparse shorter glandular hairs. **Type:** Australia. Queensland. Gregory South District: West of Eromanga, 14 August 1997, *E.R. Anderson 5069* (holo: BRI [AQ657985]).

Eremophila sp. (Eromanga E.R.Anderson 5069): Edginton (2013); Silcock *et al.* (2014).

Shrub or small tree 1.5–6 metres tall; foliage glabrous. **Branches** ± terete, becoming ± square in cross-section near tips with broad rounded ribs below leaf insertions, tuberculate with the tubercles becoming obscure on old branches, non-resinous, red-brown to brown, becoming grey with age. **Leaves** alternate and scattered, mostly spreading, some ascending to erect, especially at tips of branches; leaf blades mostly lanceolate to elliptic, some narrowly obovate, 40–60(–90) mm long, 5–10 mm wide, non-resinous, mid-green to dark green, new growth yellow-green; apex usually acute, occasionally sub-acute to obtuse, especially when leaves narrowly obovate; base tapers gradually to an indistinct short petiole; margins entire. **Flowers** 1–3 per axil; flowering and fruiting pedicels ± flattened, thickening and widening distally to become ± rectangular in cross-section, 8–20 mm long, initially green, becoming maroon or almost black. **Sepals** 5, ± broadly triangular, slightly imbricate towards base but otherwise free, not noticeably enlarging in fruit, ± equal, 3.5–4.5 mm long, *c.* 2.5 mm wide; apex acute, very slightly acuminate; outer surface glabrous except for moderately dense, short simple glandular hairs at and near margins for entire length, and sparser, longer simple eglandular hairs at the margin basally extending distally to half way to or almost to the apex; inner surface of the sepals moderately hairy with short glandular hairs, and some sparse longer, simple eglandular hairs, the eglandular hairs denser at the margins in the lower half of the sepal; green to maroon or almost black. **Corolla** ± zygomorphic, 2-lipped, deep pink or lilac to red, 20–31 mm long; upper lip 7–9 mm long, lobes 4–5 mm long, obtuse to sub-acute; lower lip 6–8 mm long, 3-lobed, lobes obtuse to sub-acute; tube 10–18 mm long, bulbous at base, moderately constricted above ovary then gradually dilating distally; inner and outer surface of tubes and lobes sparsely to moderately pubescent with colourless glandular hairs 0.2–0.5 mm long. **Stamens** 4; anthers *c.* 2.5 mm long, glabrous, in 2 pairs, 1 pair barely or not quite exserted beyond the petals, the other pair exserted well beyond the petals; filaments glabrous. **Ovary** conical-ovoid to narrowly conical-ovoid, apparently bilocular initially, but probably becoming 4-locular by development of 2 placental septa, densely pubescent with long, white simple eglandular hairs *c.* 1 mm long, sparse shorter glandular hairs also present. **Style** 18–32 mm, moderately pubescent proximally with simple eglandular hairs *c.* 1mm long and shorter glandular hairs (only near base), eglandular hair density gradually reducing distally, glabrous on distal 15–50 per cent of style. **Fruit** conical-ovoid to cylindric-conical, 8–22 mm long, 4–7 mm wide, exocarp papery, whitish to red-brown, moderately pubescent with long (*c.* 1 mm) eglandular hairs, sparse shorter glandular hairs also present; endocarp red-brown in dried specimens, crustaceous. **Figs. 1–12. Suggested common name:** Boondock emu bush.

***Additional specimens examined*:** **Australia. Queensland.** Gregory South District: 67 km SW of Eromanga, May 2012, *Powell 12* (BRI); 1.3 km N of Cunnamulla opal mine, 'Boondook', Sep 2013, *Silcock JSL1578 & McRae* (BRI); Road to Daryl opal mine, W of Eromanga, Oct 2021, *Silcock JSL2323 & al.* (BRI); Near Buckaroola Road, *c.* 74.2 km directly SW of Eromanga, Jul 2021, *Richter & Pennay s.n.* (BRI [AQ1027453]).

***Distribution and habitat*:** *Eremophila willsmithii* is known from north-west to south-west of Eromanga, in south-western Queensland (**Map 1**). The species is known to grow along drainage lines or creeks, in sandy clay loam or stony sandy loam soils. Collections have been made from a *Eucalyptus camaldulensis* Denh. woodland, a fringing *Acacia georginae* F.M.Bailey open shrubland, or in predominantly *A. cambagei* R.T.Baker woodland. Other associated species include *Acacia aneura* F.Muell. ex Benth., *Eremophila oppositifolia* R.Br., *E. glabra* (R.Br.) Ostenf., *Jasminum didymum* subsp. *lineare* (R.Br.) P.S.Green,



QUEENSLAND HERBARIUM (BRI)
Flora of Queensland Gregory South

Eremophila

Coll. E.R.Anderson 5069 14 AUG 1997

26°36'S 142°42'E Alt. m.
Depth m.

West of Eromanga (GPS 26 36 34 142 42 28).
Creek bank, sandy clay loam soil, woodland Eucalyptus camaldulensis - shrubby.
Shrub 2.5m - red flowers.

Det. R.Francis OCT 1997 Myoporaceae
Dups.
*May be cited as computerised collection number **AQ 657985**
(Archival Paper)

QUEENSLAND HERBARIUM (BRI)
Brisbane Australia
AQ 657985

Queensland Herbarium (BRI)
Eremophila sp. (Eromanga E.R. Anderson 5069)
Det. Mark Edginton Date 22/1/2014

Fig. 1. Holotype of ***Eremophila willsmithii*** (*Anderson 5069*, BRI). Photo: M. Fabillo.

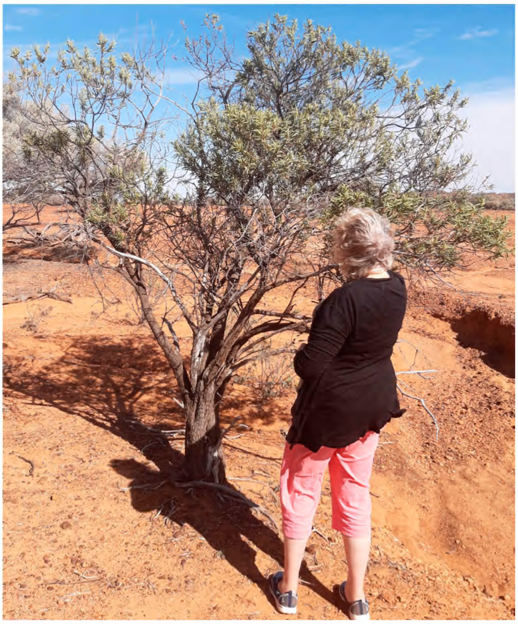


Fig. 2. ***Eremophila willsmithii*** habit (*Silcock JSL2323 & al.*, BRI). Photo: J. Silcock.

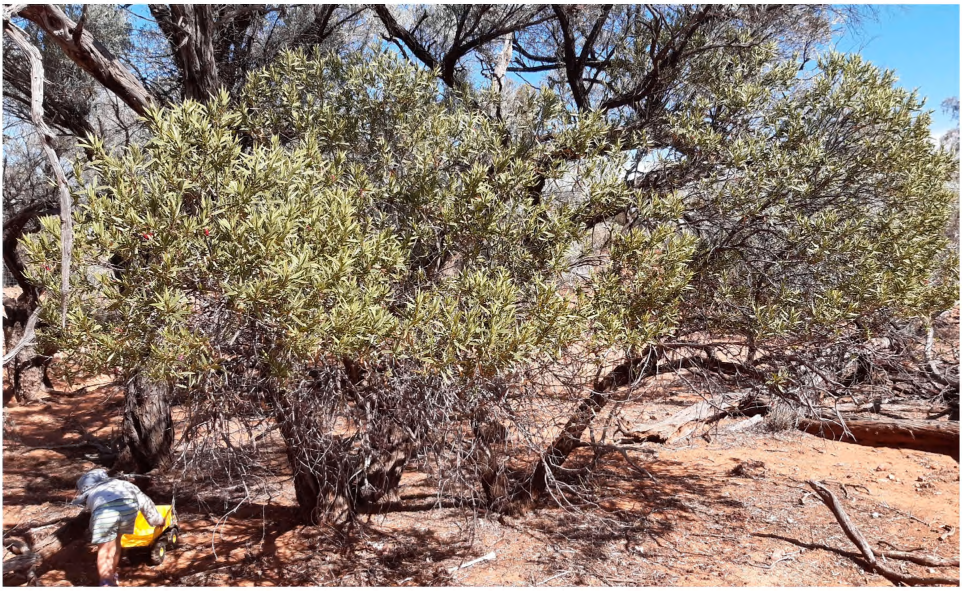


Fig. 3. ***Eremophila willsmithii*** habit (*Silcock JSL2323 & al.*, BRI). Photo: J. Silcock.

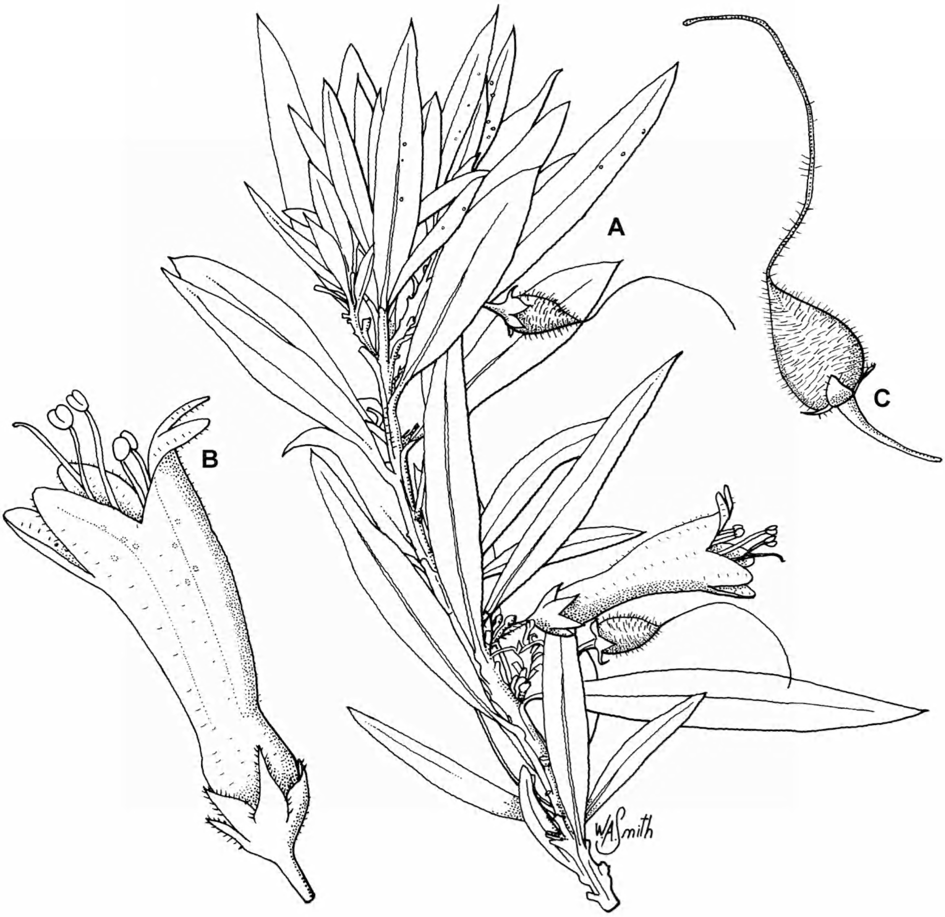


Fig. 4. ***Eremophila willsmithii.*** A. branching habit × 1. B. flower × 2. C. fruit with style on calyx and petiole × 2. A & C from *Powell 12* (BRI). B from *Anderson 5069* (BRI). Del. W. Smith.

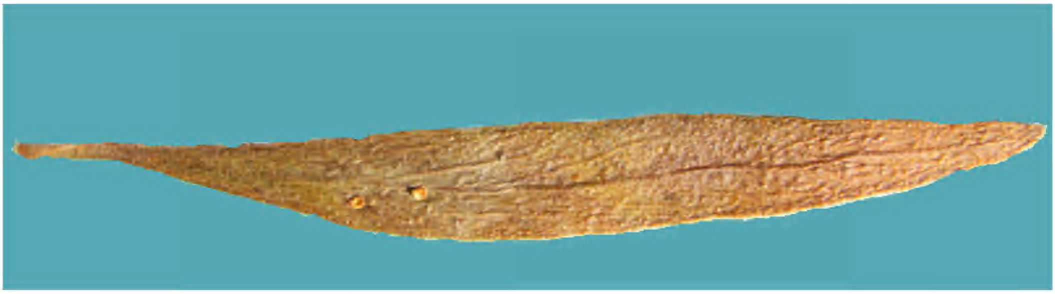


Fig. 5. Typical narrow leaf on dried specimen of ***Eremophila willsmithii*** (*Anderson 5069*, BRI).

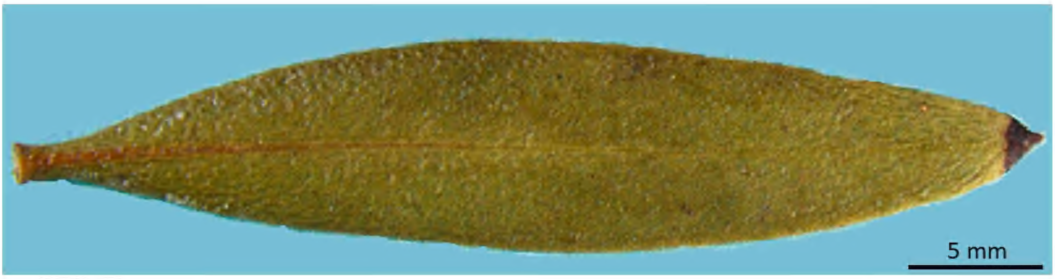


Fig. 6. Less common broader leaf on dried specimen of ***Eremophila willsmithii*** (*Powell 12*, BRI).

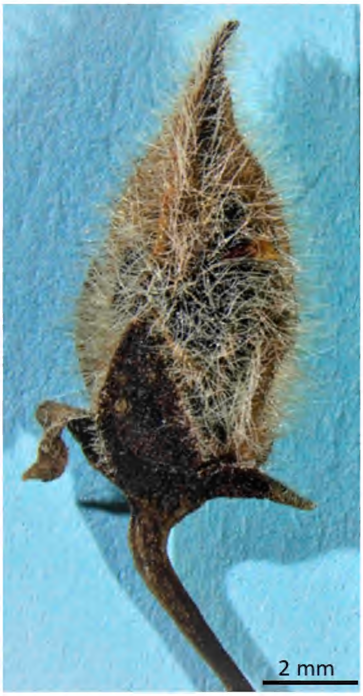


Fig. 7. Dried fruit of ***Eremophila willsmithii*** (*Powell 12*, BRI).

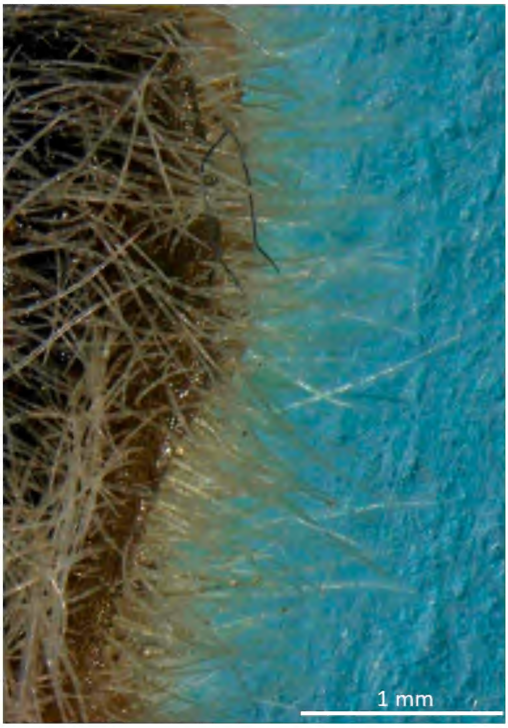


Fig. 8. Simple eglandular hairs on fruit of ***Eremophila willsmithii*** (*Powell 12*, BRI).

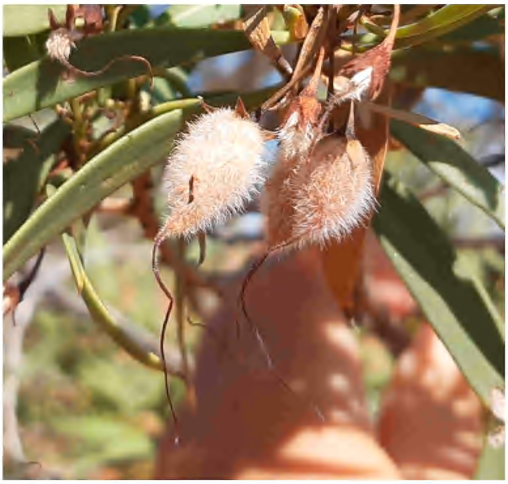


Fig. 9. ***Eremophila willsmithii*** fruits and foliage (*Silcock JSL2323 & al.*, BRI). Photo: J. Silcock.

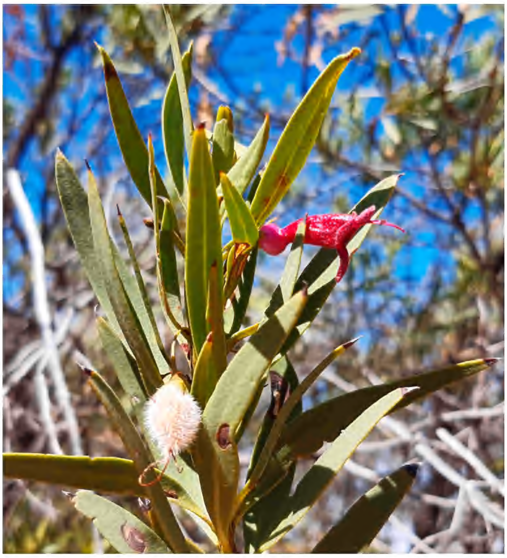


Fig. 10. ***Eremophila willsmithii*** flower in side-view; fruits and foliage (*Silcock JSL2323 & al.*, BRI). Photo: J. Silcock.

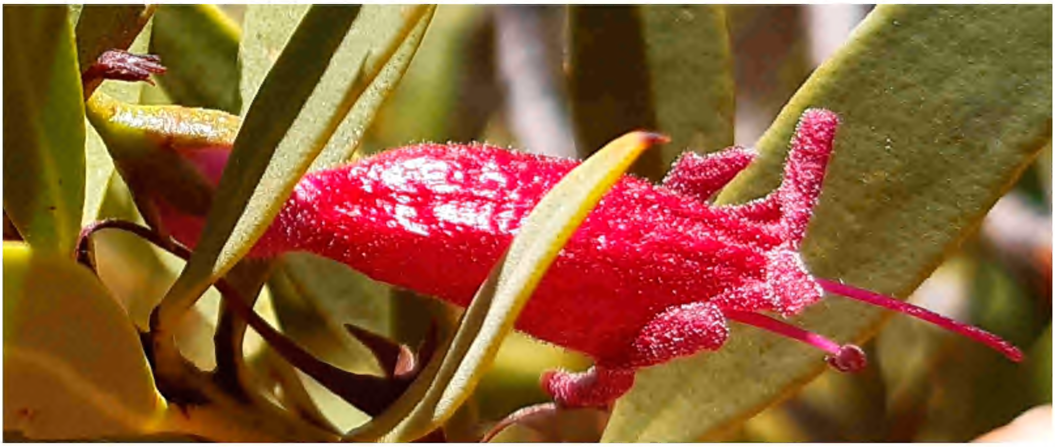


Fig. 11. ***Eremophila willsmithii*** flower in side-view with foliage (*Silcock JSL2323 & al.*, BRI). Photo: J. Silcock.

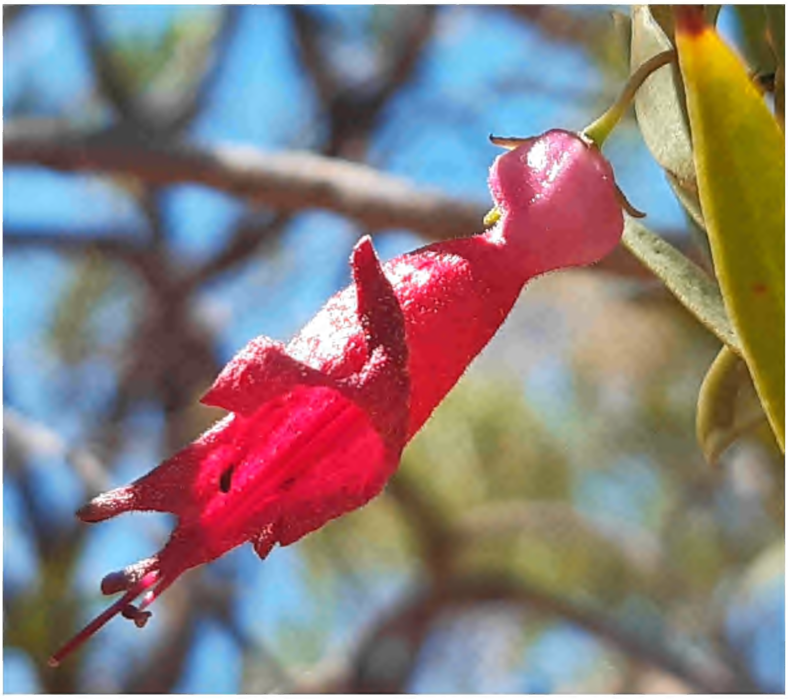


Fig. 12. ***Eremophila willsmithii*** flower in oblique front-view with foliage (*Silcock JSL2323 & al.*, BRI). Photo: J. Silcock.

Senna artemisioides subsp. *oligophylla* (F.Muell.) Randell, *Abutilon leucopetalum* (F.Muell.) F.Muell. ex Benth., *Chenopodium nitrariaceum* (F.Muell.) F.Muell. ex Benth., *Enchylaena tomentosa* R.Br., *Salsola australis* R.Br., *Sclerolaena muricata* (Moq.) Domin and *Solanum ellipticum* R.Br.

Phenology: The observed flowering and fruiting times of the various herbarium specimens of *Eremophila willsmithii* suggest that both flowering and fruiting can occur at any time of year, probably as a result of rain.

Affinities: The putative phylogenetic relationships of *Eremophila willsmithii* within the genus are currently unknown. Based on morphology, this species does not align with Chinnock's (2007) sections (either *Amphichilus* (A.DC.) L.S.Sm. or *Platychilus* (Benth.) F.Muell.), nor does it align with the clade groupings (D5, D6) of Fowler *et al.* (2021) for these taxa. The latter authors acknowledge that the nodes of the preferred phylogenetic tree lacks solid support to confidently assign new sectional or intrageneric groupings to the sampled species.

Eremophila willsmithii is not likely to be confused with any other taxon in the genus. Superficially (at the macro level), it most resembles *E. longifolia* (R.Br.) F.Muell.; however, *E. willsmithii* has foliage that is glabrous (vs. appressed pubescent on *E. longifolia*), leaves which are mostly 40–60 mm long (vs. 50–160 mm on *E. longifolia*), lamina that are lanceolate to elliptic (linear-lanceolate to linear-falcate on *E. longifolia*), and corollas which are deep pink to lilac to red, unspotted (vs. dull brick red, rarely yellow, spotted on lobes and inside of tube on *E. longifolia*). The new species has a densely pubescent conical-ovoid to narrowly conical-ovoid ovary (vs. glabrous or very rarely sparsely hairy ovoid ovary on *E. longifolia*)

Will Smith at the Queensland Herbarium sometime in the 1980s.

and a conical-ovoid to cylindric-conical moderately pubescent fruit (vs. subglobular to ovoid-oblong glabrous fruit on *E. longifolia*).

***Conservation status*: A status of 'Vulnerable' for this species (as *Eremophila* sp. (Eromanga E.R.Anderson 5069)) under Queensland's *Nature Conservation Act 1992* was recommended by Silcock *et al.* (2014) using IUCN criteria; however, the species remains unlisted and a formal nomination is required.

Much of southwest Queensland remains poorly explored in terms of the flora. Immediately beyond the known distribution of *Eremophila willsmithii* are the unsurveyed Canaway and Coleman Ranges to the north and McGregor Range to the south; these areas may contain additional populations that would have implications for both management and classification of the species status. Surveys of the Grey Range and other Tertiary sandstone ranges to the north and east found no populations of this species, suggesting the distributional range is genuinely restricted (J. Silcock pers. comm., 2022). Evidence of an existing threatening processes is based on grazing by goats at one location; therefore, this threatening process may exist elsewhere, or may arise elsewhere in the future (*ibid.*).

***Etymology*:** The new species is named for William ('Will') Smith (23 April 1954 to 26 May 2023). Will became the Queensland Herbarium's illustrator in 1985. From the early days of his employment, he was chiefly engaged to provide the illustrative and accurate line drawings that have supported species descriptions by Queensland Herbarium botanists, until his retirement in May 2019. Most notably, his illustrations were an important contribution to the Queensland Herbarium's taxonomic journal, *Austrobaileya*.

A suggested common name of ‘Boondook emu bush’ was recommended by Jenny Silcock, who has collected *E. willsmithii* at Boondook (pronounced ‘Boondock’) Station, NW of Eromanga. The recommended common name is spelt phonetically in this paper, rather than as per the original ‘Boondook’, because it is virtually inevitable that either the pronunciation or the spelling will be corrupted by common usage if the original spelling is used initially, so ‘Boondock’ is used to avoid confusion. This common name is phonetically pleasing, easy to remember and recognises the contribution made by the management of the Boondook property in allowing access.

Acknowledgments

I wish to thank Will Smith (Queensland Herbarium) for the illustrative drawings, Tony Bean (Queensland Herbarium) for the generation of the distribution map, Dr Melody Fabillo for editing work on the illustrations and provision of the image of the type specimen, and Dr Jenny Silcock (University of Queensland) for the field photos and advice on threat classification.

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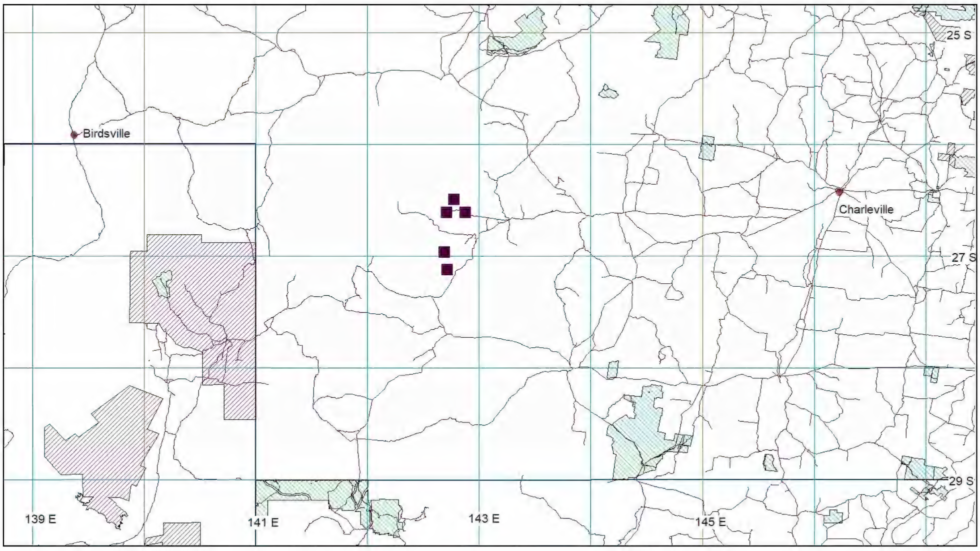

Map 1. Distribution of ***Eremophila willsmithii*** in south-west Queensland. Shaded areas indicate conservation reserves.

Denhamia trichoclada J.J.Halford and *Elaeodendron bicolor* J.J.Halford (Celastraceae): two new species from the Wet Tropics of northern Queensland.

J.J. Halford

Summary

Halford J.J. (2024). *Denhamia trichoclada* J.J.Halford and *Elaeodendron bicolor* J.J.Halford (Celastraceae): two new species from the Wet Tropics of northern Queensland. ***Austrobaileya* 14: 12–26.** Two new species of Celastraceae R.Br. are described, *viz. Denhamia trichoclada* J.J.Halford and *Elaeodendron bicolor* J.J.Halford. Both new species are illustrated, and notes are provided on distribution, habitat and conservation status. Identification keys to the Australian *Denhamia* and Australian *Elaeodendron* species are also provided.

Key Words: Celastraceae; *Denhamia*; *Denhamia trichoclada*; *Elaeodendron*; *Elaeodendron bicolor*; flora of Australia; flora of Queensland; Wet Tropics; taxonomy; identification key

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Introduction

Celastraceae R.Br. in Queensland is currently comprised of 15 genera and 35 described species (with the exclusion of taxa from within Stackhousiaceae R.Br., which is still recognised in Queensland) (Jessup & Halford 2022). Of these, many regionally endemic species occur in the highly diverse rainforests of the Wet Tropics of northern Queensland.

Two new species of Celastraceae from the Wet Tropics, *viz. Denhamia trichoclada* and *Elaeodendron bicolor* are described in this paper. An accompanying key is provided for each species to demonstrate the characteristics that separate these two species from all other species that are present within their respective genera from within the Australian flora.

Materials and methods

Dried and spirit material of both new species were examined for all available specimens from BRI and CNS, as were representative specimens from morphologically similar taxa in those genera. Measurements were made from dried material. Targeted fieldwork (particularly for *D. trichoclada*) was carried out in July of 2022 to supplement the morphological examinations. Live specimens of *Elaeodendron bicolor* present within the Brisbane Botanic Gardens living collection were also observed and collected. Measurements are inclusive in the descriptions, i.e., 1.0–1.7 is given as 1–1.7.

National Park is abbreviated as NP and State Forest/State Forest Reserve is abbreviated as SF/SFR in the specimen citations.

Taxonomy

Denhamia trichoclada J.J.Halford **sp. nov.**

With morphological affinity to *Denhamia bilocularis* (F.Muell.) M.P.Simmons, but differing by the presence of glandular trichomes on branchlets, peduncles and pedicels (glabrous in *D. bilocularis*), and by the mostly paniculate inflorescences (racemose in *D. bilocularis*). **Type:** Queensland. COOK DISTRICT: SFR 144, 22 April 1976, *B. Hyland 3416RFK* (holo: BRI [AQ 384107]; iso: CANB, CNS, NSW *distribuendi*).

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Maytenus sp. aff. *M. bilocularis*: Christophel *et al*. (1993: 3, 17, 35, 79).

Maytenus sp. aff. *M. bilocularis*: Hyland & Whiffin (1993a: 111, 115, 173).

Maytenus sp. aff. *M. bilocularis*: Hyland & Whiffin (1993b: 63).

Maytenus sp. aff. *M. bilocularis*: Hyland *et al.* (1994: 302).

Maytenus sp. (Windsor Tableland BH 3416RFK): Hyland *et al*. (1999: 60).

Maytenus sp. (Windsor Tableland): Cooper & Cooper (2004: 118).

Maytenus sp. Windsor Tableland (B.Hyland 3416RFK): Centre for Australian National Biodiversity Research (2010).

Denhamia bilocularis (*pro parte*): CHAH (2021).

Shrub or small tree to 7 m tall; outer bark mottled, pale grey to pale brown, smooth, sometimes becoming fissured and flaky with age; inner bark layer thin, brightly orange; branchlets brown, striate, covered in minute glandular trichomes, becoming glabrescent with time; stipules linear-triangular, to 2 mm long, caducous. Leaves alternate, petioles 3–12 mm long, with or without minute glandular trichomes; lamina elliptic, rarely ovate, thin and flexible, 4–13.5 cm long and 1.5–4.5 cm wide (length : breadth ratio range approx. 2–3 : 1), the base attenuate and the apex acuminate to acute, margins minutely and irregularly toothed, almost appearing entire, ± glabrescent with minute glandular trichomes (if so, hairs confined to the base of the lamina), minutely and sparsely scabrous (more so on the adaxial surface), mid to dark green and shiny above, paler and matt below, new growth deep red, midvein raised on both surfaces, secondary veins 4–8 pairs. Inflorescence mostly paniculate or occasionally racemose; peduncles to 2.8 mm long, brown, covered in minute capitate glandular trichomes. Flowers bisexual, 5-merous; pedicels to 2.2 mm long, brown; sepals concave, broadly ovate, to 1mm long, sparsely to densely clothed in glandular trichomes on the abaxial surface, erose; petals oblong-ovate, concave, 1.8–2.4 mm long and 1.5–2 mm wide, white, creamy yellow or pale green; staminal filaments 0.5–1.1 mm long, anthers latrorse; disc to 1.4 mm diameter, ovary glabrous, 2-locular, style to 0.8 mm long, stigma 2-lobed and more or less splayed, sometimes pubescent with short glandular trichomes. Capsule obovoid, 5–8 mm long and 3–6 mm diam., ripening through yellow to orange or red-brown; seed 1, to 3.5 mm long and 3 mm wide, red-brown, surrounded by a thin, somewhat membranous aril, whitish through to yellow. **Figs. 1 & 2.**

***Additional selected specimens examined*: Queensland.** Cook District: SFR 144, Piccaninny Creek, Aug 1982, *Dansie s.n.* (CNS [QRS 506227.1]); Julatten, on Pinnacle Road *c.* 3.9 km E of Black Mt Road intersection, Jul 2022, *Halford JJH1313 & Booth* (BRI); Near bank of Flin Creek, *c.* 8 km NE [1 km SE] of 'The Pinnacle', *c.* 8 km NE of Julatten, Jan 1977, *Moriarty 2201* (CNS); *c.* 1 km S of 'The Pinnacle', & *c.* 12 km SSE of Mossman, Jun 1978, *Moriarty 2319* (BRI, CNS); Black Mountain, Jul 1999, *Jago 5302 et al.* (BRI); *ibid*, Jul 1999, *Jago 5305 et al.* (BRI); *ibid*, Jul 1999, *Jago 5312 et al.* (BRI); SFR 1973 (Black Mountain Road), Aug 1968, *Martin s.n.* (CNS [QRS 2577.1]).

***Distribution and habitat*:** *Denhamia trichoclada* is currently known from three localities in the Wet Tropics of northern Queensland (**Map 1**): the Mount Windsor Tableland; the peak of the Black Mountain monolith and adjacent lower elevation surrounds between Julatten and Kuranda; and northwest of Black Mountain in the upper reaches of Flin Creek (vicinity of The Pinnacle). At Mount Windsor Tableland and Black Mountain peak it has been collected at high elevation on granite, from simple notophyll vine forest at the former and low wind-sheared notophyll vine forest on rocky outcrops at the latter. In the upper Flin Creek catchment and the lower elevation surrounds of Black Mountain the species occurs in simple to complex mesophyll to notophyll vine forest on metamorphics, usually in association with creeks and drainage lines. The species has an elevation range of between 375 m and 1150 m.

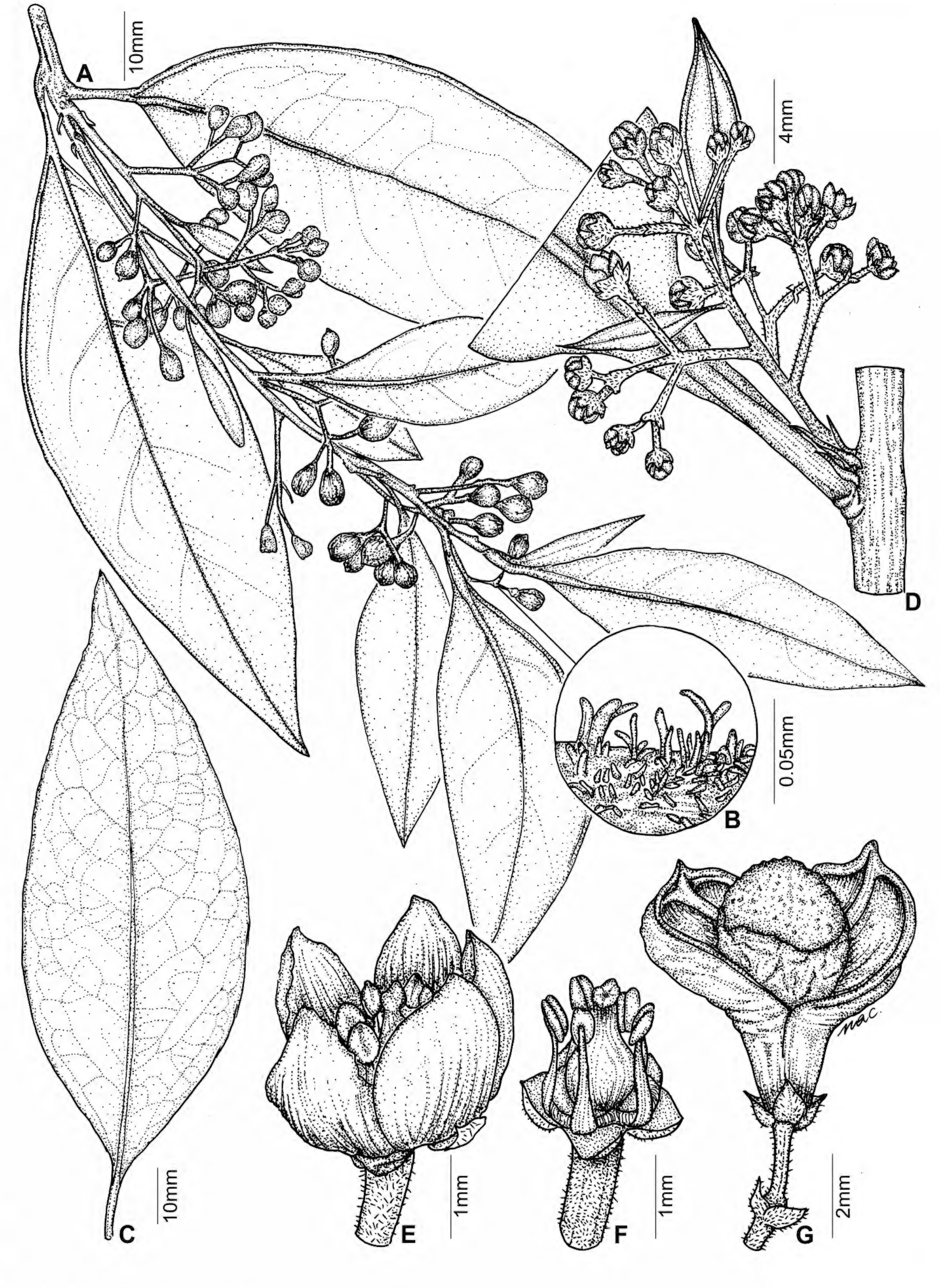

Fig. 1. *Denhamia trichoclada*. A. fruiting branchlet. B. trichomes on an inflorescence. C. adult leaf. D. paniculate inflorescence. E. flower. F. flower with petals removed. G. mature fruit. A, B & D–F from *Hyland 3416RFK* (BRI); C & G from *Halford JJH1313 & Booth* (BRI). Del. N. Crosswell.

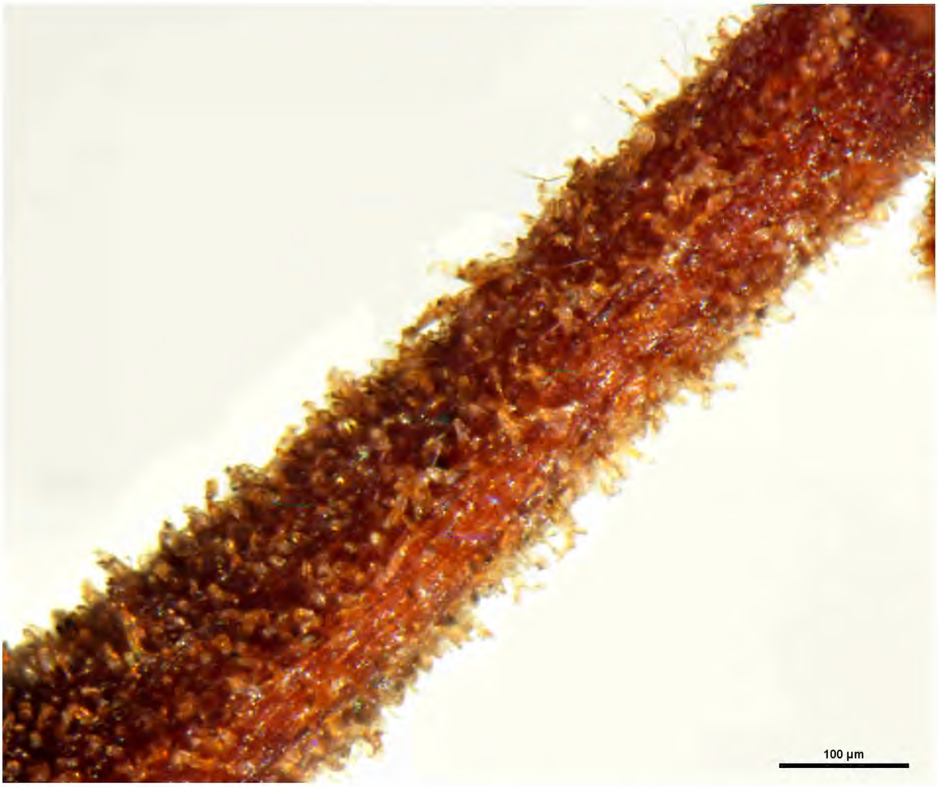

Fig. 2. ***Denhamia trichoclada***. Trichomes on inflorescence. From *Hyland 3416RFK* (BRI). Del. M. Fabillo.

Individuals present in the upper Flin Creek catchment and at Black Mountain may form part of a broader subpopulation that, based on current knowledge, is disjunct from individuals present at Mount Windsor Tableland, thereby constituting two subpopulations for the species. Of these two subpopulations, it is likely the Windsor Tableland subpopulation is larger, given the greater extent of available habitat. Interestingly, no individuals have thus far been recorded on Mount Spurgeon or Mount Lewis, both of which provide suitable habitat between the two currently known subpopulations; nor has it been recorded in the continuously linked forests of the Daintree National Park to the east of Mount Windsor Tableland.

Phenology: Based on herbarium records and personal observations, flowers have been recorded in April and July and mature fruits have been recorded in April, July and August.

Notes: *Denhamia trichoclada* is unique within the genus for possessing glandular trichomes in young stems and inflorescences. The functions of glandular trichomes in plants include, amongst other traits, the defence of plant parts from herbivores and pathogens through the accumulation and secretion of volatile oils (Glas *et al*. 2012). Whilst there has been no research into the evolution and function of glandular trichomes in *D. trichoclada*, it would be interesting to know if their development could possibly be an adaptation to protect new growth – particularly that which supports reproductive organs – from herbivores and pathogens in the wet, tropical, closed forest habitats in which the species occurs. High levels of both plant predation and attack from plant pathogens are known to occur in tropical rainforests (Coley & Barone 1996) and are thought to be drivers in plant diversity and composition (Bagchi *et al*. 2014). Heavy predation of inflorescences has been observed in a rare, glabrous species of *Denhamia* from central Queensland, which is thought to limit its reproductive output (Halford & Jessup 2020).

Denhamia trichoclada differs further from *D. bilocularis* by the development of usually paniculate inflorescences, which are lacking in the latter (racemose or singular if the axis develops into a leafy shoot). The two species may also differ in their preferred habitats, with *D. trichoclada* having a propensity to inhabit well developed rainforests (simple to complex, mesophyll to notophyll vine forests), whereas *D. bilocularis* is most often found in microphyll vine forests, vine thickets and wet tall open forests. The ranges of the two species do not overlap, with *D. bilocularis* extending as far north as the Atherton Tableland, to the west of the town of Atherton, some 120 km to the south of the Mount Windsor Tableland population and 70 km from the Black Mountain population. They are also separated by the Black Mountain Corridor biogeographical boundary (Moritz *et al*. 2009; Bryant & Krosch 2016).

While specimens from the Atherton Tableland were included in earlier publications with the possibility of their being a distinct species allied to *D. bilocularis* (e.g. Cooper & Cooper 2004), specimens from this location lack the glandular trichomes of *D. trichoclada*, and in those seen, also lack the paniculate inflorescences. A focused population genetics study on the Atherton Tablelands subpopulaton of *D. bilocularis* and *D. trichoclada* may allow for a better understanding of the relationship between the two taxa: if, when or how species divergence has taken place, and whether such divergence has been driven by the influence of the Black Mountain Corridor biogeographical boundary. The Black Mountain Corridor has previously been linked to allopatric speciation within a number of other rainforest plant genera, such as those in Australian *Gillbeea* F.Muell. (Rozefelds & Pellow 2000) and *Lomandra* Labill. (Wang 2021), and as an impediment to gene flow across populations of *Elaeocarpus* L. (Rosetto *et al*. 2007; Mellick *et al*. 2014) and *Dendrobium* Sw. (Burke *et al*. 2013). Further studies in population genetics might not only provide a better understanding of the relationship between *D. trichoclada* and *D. bilocularis,* but may also prove useful to understanding the overall genetic health of *D. trichoclada* for conservation purposes.

Key to Australian *Denhamia* species (adapted from Halford & Jessup 2020; nomenclature as per Jessup & Halford 2022):

1 Ovary perfectly 2 or 3-locular with ovules 2 per locule at base of septa; septa connate, touching axially in fruit; valves of capsules crustaceous (**Australian taxa formerly in *Maytenus***) **2**
1. Ovary perfectly or imperfectly 2–5-locular with ovules 2–10 per locule, not confined to base of septa; septa touching near apex, base connate but otherwise not touching axially in fruit, valves of capsules mostly woody (***Denhamia* in the original sense**) **8**

2 Aril thick, restricted to base of seed **3**
2. Aril thin, surrounding at least half of seed **4**

3 Flowers 4-merous, disc *c*. 1 mm diameter E Qld, NE NSW . . . . **D. disperma**
3. Flowers 5-merous; disc *c*. 2.3 mm diameter N NT, N WA . . . . **D. muelleri**

4 Flowers in fascicles NE Qld. . . . . **D. fasciculiflora**
4. Flowers in racemes or panicles **5**

5 Flowers mostly in panicles, sometimes racemes; inflorescence axes and young stems covered in capitate glandular trichomes. NE Qld. . . . . **D. trichoclada**
5. Flowers always in racemes; inflorescences and young stems glabrous **6**

6 Leaves bright green, concolorous or rarely discolorous; margins always entire, not recurved Qld, N NSW, NT and N WA . . . . **D. cunninghamii**
6. Leaves discolorous, grey-green below, darker above; margins usually serrate, slightly recurved **7**

7 Leaves narrowly lanceolate, narrowly ovate, obovate or oblanceolate, length:breadth 12–4.5:1, apices usually acuminate, mucronate or acute. SE QLD, E NSW . . . . **D. silvestris**
7. Leaves broadly lanceolate, elliptic, ovate or obovate, length:breadth 3–2:1, apices usually obtuse to slightly acuminate. E Qld, NE NSW. . . . . **D. bilocularis**

8 Adult leaves serrate or serrulate, sometimes obscurely so **9**
8. Adult leaves entire **12**

9 Ovary perfectly 3–5-locular; capsule depressed-globular or slightly obovoid; septa connate axially in fruit. E Qld. . . . . **D. pittosporoides**
9. Ovary perfectly or imperfectly 3-locular; capsule ovoid; septa not connate axially in fruit **10**

10 Capsule 2.7–5.5 cm long and walls 3–5 mm thick; style 1–1.5 mm long; lamina thickly covered in waxy cuticle on the abaxial surface; petiole 5–13 mm long. Central Qld.. . . . . **D. megacarpa**
10. Capsule less than 2.4 cm long or walls less than 2 mm thick **11**

11 Style to 0.3 mm long; lamina 0.5–3 cm long; petiole 0.6–1 mm long. SE Qld. . . . . **D. parvifolia**
11. Style greater than 1 mm long; lamina more than 3 cm long; petiole more than 1 mm long **12**

12 Style 1.2–1.7 mm long; pedicel 1.7–3 mm long; lamina 3–9 cm long and 1.1–3.7 cm wide, petiole 1.5–4 mm long; capsule 1.6–2.4 cm long. CYP, Qld. . . . . **D. peninsularis**
12. Style 2–2.5 mm long; pedicel to 1 mm long; lamina 4–12 cm long and 1–4.5 cm wide, petiole 2–5 mm long; capsule 1–1.7 cm long. E. Qld, NE NSW . . . . **D. celastroides**

13 Valves of capsules coriaceous; septa at least partially connate or touching axially. NE NSW . . . . **D. moorei**
13. Valves of capsule woody; septa not touching axially **14**

14 Capsule valves 0.3–0.5 mm thick; petiole 0.6–1 mm long. SE Qld . . . . . . **D. parvifolia**
14. Capsule valves 0.9–5 mm thick; petiole 4–13 mm long **15**

15 Filaments 0.5–1 mm long; style very short or obsolete; ovary with 6 ovules per carpel; capsule valves 3–3.5 mm thick. N NT, N WA. . . . . **D. obscura**
15. Filaments *c.* 1.3 mm or more long; style 0.4–1.5 mm long; ovary with 8–10, rarely 6, ovules per carpel. **16**

16 Pedicels 4–11 mm long; lamina with a thick waxy cuticle on the abaxial surface; inflorescence a complex cyme; capsule 2.7–5.5 cm long and 3–5 mm thick; petals 4–5 mm long. Central Qld . . . .**D. megacarpa**
16. Pedicels no more than 4 mm long; lamina lacking a thick waxy cuticle on the abaxial surface; inflorescence a simple cyme or raceme; capsule no greater than 4.5 cm long or 3 mm thick. **17**

17 Petals 3–3.5 mm long; capsule ovoid, rarely obovoid, 1.5–2.8 cm long; inflorescence many-flowered. N & Central Qld. . . . . **D. oleaster**
17. Petals 3.5–4.5 mm long; capsule fusiform or obovoid, 25–45 mm long; inflorescence 1–3-flowered. NE Qld. . . . . **D. viridissima**

***Conservation status*:** Based on calculations using the GeoCAT conservation assessment tool (Bachman *et al.* 2011), *Denhamia trichoclada* currently has an extent of occurrence (EOO) of 72 km^2 and an area of occupancy (AOO) of 20 km^2. Most of the currently known locations of *D. trichoclada* are within the reserve system and the area in which it grows at Mount Windsor Tableland is relatively intact, due largely to the extent of protected area. Despite the apparent extent of quality habitat, in most locations where the species is known to occur, it appears to be naturally quite rare (J. Halford pers. obs. from targeted surveys in 2022).

From observation, the preferred habitat of *Denhamia trichoclada* appears to be gaps and margins within the rainforest environment, hence the species may require ample available light to persist or alternatively, be outcompeted in its absence. As an example, individuals present on the Black Mountain monolith appear confined to large rocky outcrops at the mountain peak where there is sufficient available light in what is otherwise a densely structured low forest.

The population has also been impacted historically by habitat destruction. These impacts have been greatest in the Julatten – Black Mountain subpopulation where habitat has been fragmented by land clearing for forestry and agriculture, and to a lesser extent in the Mount Windsor Tableland subpopulation, where forestry activities ceased in 1989. Whilst it is difficult to know the original size and extent of the Julatten – Black Mountain subpopulation, past land clearing has undoubtedly reduced the population size from its pre-European level.

Although the broader area in which the species occurs has been well surveyed in the past 50 or more years, the quantity of specimens housed in herbaria is notably low. Despite this paucity in historical collecting, targeted searches in the Mount Spurgeon, Mount Lewis and Daintree NPs may result in new locations for this species, increasing the currently limited EOO and AOO. Likewise, further targeted survey in appropriate habitat at Mount Windsor Tableland NP, Mowbray NP and Kuranda NP may lead to an increase in known population size. Whilst further targeted surveys would undoubtably increase the known EOO, AOO and population size of this species, any increase may unlikely be significant to warrant a listing of Near Threatened or Least Concern. Based on current knowledge and applying the precautionary principal, a listing of Endangered would be recommended for *D. trichoclada*, based on criterion D1 (IUCN 2012); however, due to the extent of potentially suitable habitat and a lack of targeted search in remote areas of the aforementioned National Parks, a recommendation of **Data Deficient** is currently more appropriate for this species.

Etymology: The species epithet is derived from the Greek pronoun *tricho*, meaning hair, and *clados*, meaning shoot or branch; and refers to the glandulose trichomes present on new shoots and inflorescence axes, a defining feature in this species.

Elaeodendron bicolor J.J.Halford **sp. nov.**

With morphological affinity to *E. australe* Vent., but differing in the strongly flanged to angular stems (terete or rarely angular in *E. australe*); the larger leaves to 17 cm long and 8 cm wide on mature plants and sapling leaves to 21 cm long and 9 cm wide (to 11 cm long and 4.5 cm wide, with sapling leaves to 13 cm long and 7 cm wide in the larger leaved, typical variety of *E. australe*); and fruit exocarp colour varying from entirely red to entirely black or a combination of red and black (exocarp consistently red throughout in *E. australe*). **Type:** Queensland. Cook District: State Forest 144, Mt Windsor Tableland, 30 October 1999, *P.I. Forster PIF25128 & R. Booth* (♂) (holo: BRI [AQ 681339 comprising 1 sheet and spirit]; iso: CANB, CNS, K, L, MEL, NSW).

Cassine australis var. (Windsor Tableland B.P.Hyland 5574): Jessup (1997: 45).

Cassine australis var. *australis*: Cooper & Cooper (1994: 66).

Elaeodendron australe var. (Windsor Tableland B.P.Hyland 5574): Jessup (2002: 44; 2007: 44; 2010: 39): Jessup & Halford (2022).

Elaeodendron australe var. *australe* (*pro parte*): Cooper & Cooper (2004: 115).

Illustrations: Cooper & Cooper (1994: 67), as *Cassine australis* var. *australis*; Cooper & Cooper (2004: 115), as *Elaeodendron australe* var. *australe*.

Dioecious woody shrub or small tree to 8 m tall, trunk erect, bark grey, nondescript. Branchlets strongly angled to flanged, the remnants of which occasionally persisting as faint patterned ridges on older branches, green; stipules triangular or cuspidate, to 1 mm long, caducous. Leaves thinly coriaceous; petioles 5–12 mm long, channelled adaxially; lamina opposite, broadly ovate to ovate, or broadly elliptic to elliptic, 6–17 cm long and 3–8 cm wide (sapling leaves larger, to 21 cm long and 9 cm wide), apices mostly obtuse to acute, sometimes round in sapling leaves and occasionally acuminate on mature leaves, bases obtuse to acute, sometimes round in sapling leaves, adaxial surface glossy, mid-green in colour, the midvein more or less level, the abaxial surface paler with the midvein prominently raised, secondary veins comprising 4–8 pairs, margins shallowly crenate to almost entire. Inflorescence an axillary cyme, peduncles highly variable in length to 13 mm. Flowers 4-merous, pedicels to 6 mm long; calyx lobes 0.7–1.5 mm long with erose margins; petals broadly ovate, 1.5–2 mm long and 0.9–1.6 mm wide; male flowers with staminal filaments 0.5–0.9 mm long, inserted on the margin of the disc, anthers latrorse, disc shallowly conical, the pistillode an undeveloped style forming a small projection from the centre of the disc; female flowers with 4 staminodes inserted on the disc margin, disc *c.*1.4 mm across, ovary ovoid to conical, 2-locular, style to 0.3 mm long, stigma entire, slightly clavate. Fruit 10–22 mm long and 8–10 mm wide, exocarp thin, ripening through orange-red to (rarely) entirely red or black or (commonly) variously marked with both colours, mesocarp fleshy, endocarp a stone to ± 1 mm thick, containing one seed. **Fig. 3.**

Additional selected specimens examined**: Queensland.** Cook District: Annan River (Yuku Baja-Muliku) NP, Mt Ellen, SSW of Cooktown, Apr 2017, *Forster PIF45066 & McDonald* (BRI); Shiptons Flat, Jun 1996, *Jago 4026 & Roberts* (BRI); SFR 144 (Windsor Tableland), Oct 1971, *Hyland 5574* (BRI); SFR 144 Windsor Tableland, Dec 1978, *B. Gray 1193* (BRI, CNS); Mt Windsor Tableland, *c.* 9 km N of lower Spencer Creek crossing, Jul 2022, *Halford JJH1314 & Booth* (BRI); *ibid*, Jul 2022, *Halford JJH1335 & Booth* (BRI); Hunters Creek Road from Mt Molloy to Julatten, Feb 1996, *Gray 6635* (BRI, CNS); Bunda Bugal (Black Mountain–Harris Peak), Kuranda NP, southern ridgeline towards the top, Aug 2022, *Halford JJH1342 et al.* (BRI); Dinden Forest Reserve, 9.8 km along Bridle Creek Road from Davies Creek Road, E of Mareeba, Aug 2004, *Ford AF4405 & Hewett* (BRI); Wrights Creek, Edmonton, Feb 1996, *Jago 3768* (BRI). North Kennedy District: SF 461, Stony Creek, *c.* 3 km S of Cardwell, *c.* 80 m upstream from power line, Jun 1978, *Thorsborne 447 & Travers* (BRI); SF 461, Five Mile Creek, *c.* 6.5 km S of Cardwell, *c.* 1.5 km W of Bruce Highway, Oct 1978, *Thorsborne 481 & Travers* (BRI); Mt Fox, 70 km SW of Ingham, Apr 1992, *Halford Q932* (BRI); Little Crystal Creek, on road from Bruce Hwy to Paluma, Oct 1992, *Cummings 12340* (BRI); Paluma Range, Hervey Holding, Jun 1974, *Hyland 7284* (BRI, CNS). Moreton: Brisbane Botanic Gardens Mt Coot-tha, Australian Plant Communities section (cultivated, ex hort.), Jun 2022, *Halford JJH1289 & Gilby* (BRI); *ibid*, Sep 2022, *Halford JJH1388 & Gilby* (BRI); *ibid*, Sep 2022, *Halford JJH1389 & Gilby* (BRI).

Distribution and habitat**:** *Elaeodendron bicolor* is known to occur from Annan River (Yuku Baja-Muliku) NP south of Cooktown, south to the Paluma Range NP west of Townsville, (Map 2). It occurs on igneous geology (predominately granite) and associated alluvium, usually in simple notophyll vine forest, although preferred habitat may range from complex notophyll vine forests in the coastal ranges to the mesic extreme of semi evergreen vine thickets at Mt Fox. The species has an elevation range of between 65 and 1000 m.

Phenology**:** Flowers have been recorded in October – December, February, April, June and August. Fruit have been recorded in February, June, August and October.

Notes**:** *Elaeodendron bicolor* was previously included within *E. australe* under the phrase name *E. australe* var. (Windsor Tableland B.Hyland 5574) (Jessup & Halford 2022). However, *E. bicolor* is separated geographically from the typical variety of this species by the Burdekin Gap, a broad biogeographical barrier that represents the northern limit of the Brigalow Belt (see Bryant & Krosch 2016). The nearest, most northern recorded specimen of *E. australe* var. *australe*, is from the Clarke Range northwest of Mackay, a distance of *c.* 270 km from *E. bicolor*. The vastness of the Burdekin Gap biogeographical barrier, coupled with a paucity of refugial mesic outposts within its bounds, has likely led to genetic separation between these two taxa for a considerable time, effectively eliminating gene flow.

Whilst the typical variety of *Elaeodendron australe* is similarly restricted to more mesic forests, *E. australe* var. *integrifolium* (Tratt.) DC. has a preference for more xeric vine thickets and *Acacia harpophylla* F.Muell. ex Benth. dominated forests and woodlands. This variety is therefore more likely to occupy pockets of these vegetation types where they occur within the Burdekin Gap. However, the occurrence of *E. australe* var. *integrifolium* appears extremely sporadic in the north of its range and the preference for different habitats suggests gene exchange between *E. bicolor* and E. *australe* var. *integrifolium* would also be very limited if not non-existent.

Within *Elaeodendron bicolor*, fruiting specimens housed at both BRI and CNS are somewhat suggestive of a colour gradient within the fruit exocarp that approximates a latitudinal gradient, with predominantly black exocarp colour observed in the north of its range (e.g. Mount Windsor Tableland) and mainly red in the south of its range (e.g. south of Cardwell).

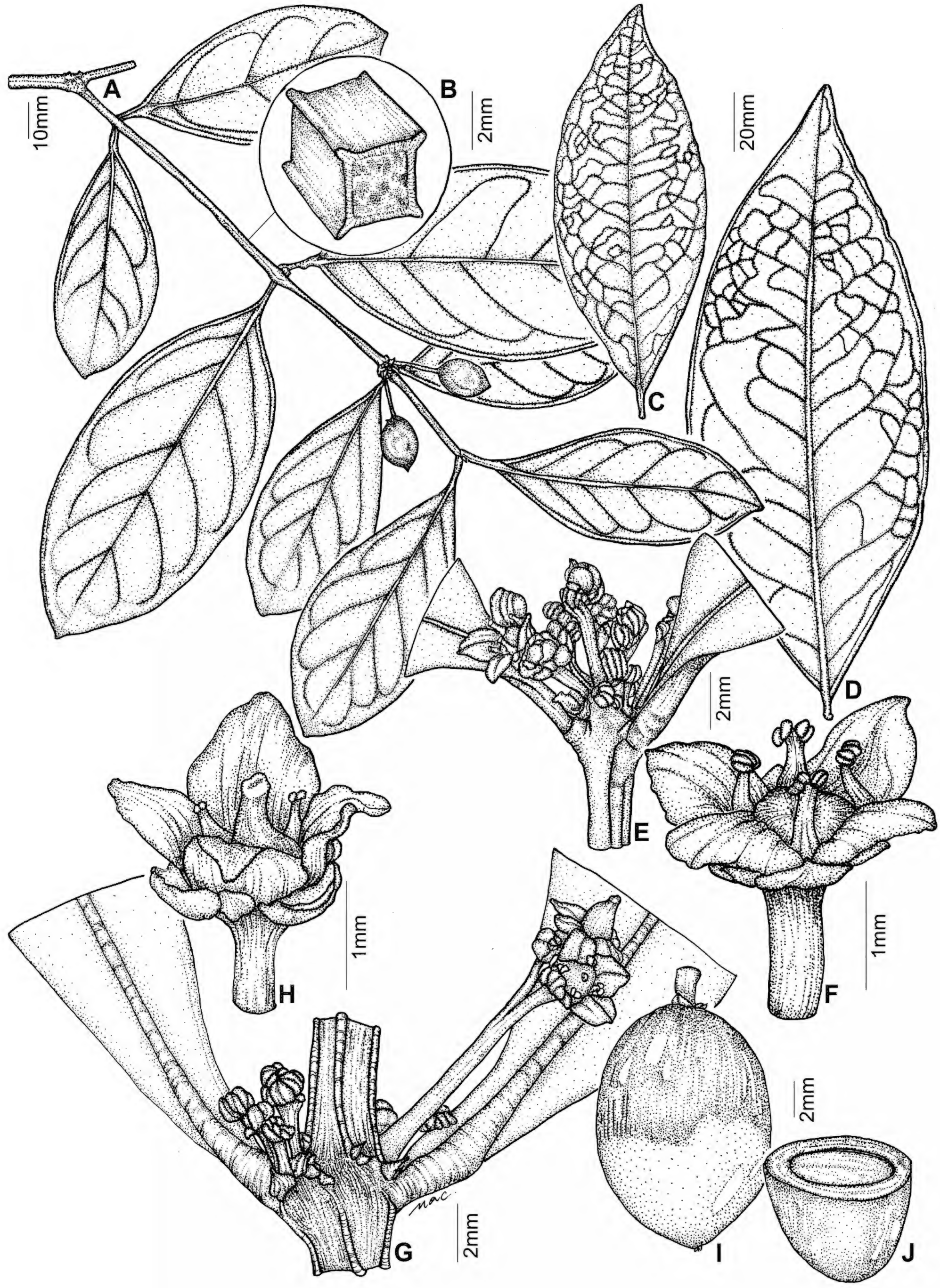

Fig. 3. ***Elaeodendron bicolor***. A. fruiting branchlet. B. flanged stem. C. adult leaf. D. juvenile leaf. E. male inflorescences. F. male flower. G. female inflorescences. H. female flower. I. mature fruit. J. mature fruit dissected. A, B & I, J from *Halford JJH1289 & Gilby* (BRI); C from *Halford JJH 1314 & Booth* (BRI); D from *Halford JJH1335 & Booth* (BRI); E, F from *Halford JJH1389 & Gilby* (BRI); G, H from *Halford JJH1388 & Gilby* (BRI). Del. N. Crosswell.

Observations on fruiting plants reveal a high level of variation present in endocarp colour present in the fruit of one individual at one point in time. Fruit ripen from green through to entirely orange, maturing from almost entirely red to entirely black. Plants may display fruit at varying stages of development or may produce fruit that are entirely at the same stage of development, as was observed in a recent survey at Black Mountain in which all fruit were developing towards maturity and their endocarps were entirely orange [see *Halford JJH1342 et al.* (BRI)]. It is possible fruiting herbarium specimens collected in the southern part of the species' range were collected with fruit slightly immature, and therefore still entirely orange.

There currently exists a spatial gap in the collecting records within this species distribution that incorporates the Bellenden Ker Range south to the Walter Hill Range (approximately Gordonvale to Tully), essentially creating two perceived subpopulations. This current gap in the known distribution of the species somewhat corresponds with the observed fruit colour variation. It is possible that the higher rainfall area of the Bellenden Ker Range that supports more complex closed forests excludes *Elaeodendron bicolor*, although this apparent spatial gap may simply be a product of under collecting. Plants fitting the description of *E. bicolor* have occasionally been observed in disjunct patches of Araucarian dominated vine forests in the western margins of rainforest within the Atherton Tableland (west of Bellenden Ker Range) south through Koombooloomba NP (A. Ford pers. comm.). The existence of individuals along the western margin of the Wet Tropics would allow for some geneflow to occur between plants north and south of the Bellenden Ker and Walter Hill Ranges, thus limiting the likelihood of isolation which may lead to significant population structuring.

Key to Australian species of *Elaeodendron* (adapted from Jessup 1984)

1 Perianth 3 (rarely 4)-merous; ovary 3-locular; fruit globular, exocarp colour consistently black throughout when ripe . . . . **Elaeodendron melanocarpum**.
1. Perianth 4-merous; ovary 2-locular; fruit ovoid or broadly ellipsoid, exocarp orange, red with or without areas of black (or rarely with a few fruit black throughout) when ripe **2**

2 Stems flanged to angled; mature leaves to 17 cm long and 8 cm wide (to 21 cm long and 9 cm wide in saplings), exocarp colour of ripe fruit red, black or most often a combination of the two . . . . **Elaeodendron bicolor**
2. Stems terete, rarely angled; mature leaves to 11 cm long and 4.5 cm wide (to 13 cm long and 7 cm wide in saplings), exocarp colour of ripe fruit consistently red throughout . . . . **Elaeodendron australe**

***Conservation status*:** *Elaeodendron bicolor* has an EOO of 16, 139 km^2 and an AOO of 68 km^2, based on calculations derived from the GeoCAT conservation assessment tool (Bachman *et al.* 2011). Within this extent much of the preferred habitat is intact, often albeit patchily distributed within other unsuitable forest types that are continuously linked throughout the landscape. The species is well protected, the majority of current records being within the reserve system. Whilst the AOO is low, reflecting the patchy distribution of preferred habitat, there is a probability the species is under collected throughout its range and targeted surveys would likely see an increase in the number of known locations and AOO. Therefore, a listing of **Least Concern** is recommended for this species.

***Etymology*:** The species epithet, *bicolor* is Latin for two-coloured (*bi* meaning two, *color* meaning colour) and is given in reference to the exocarp of the fruit, which are variously red and black.

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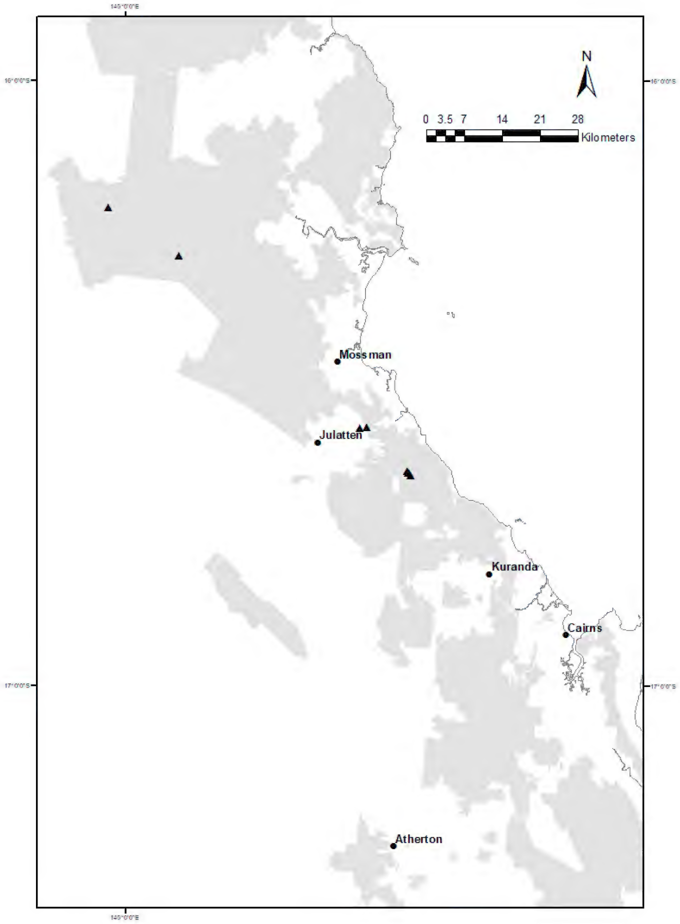
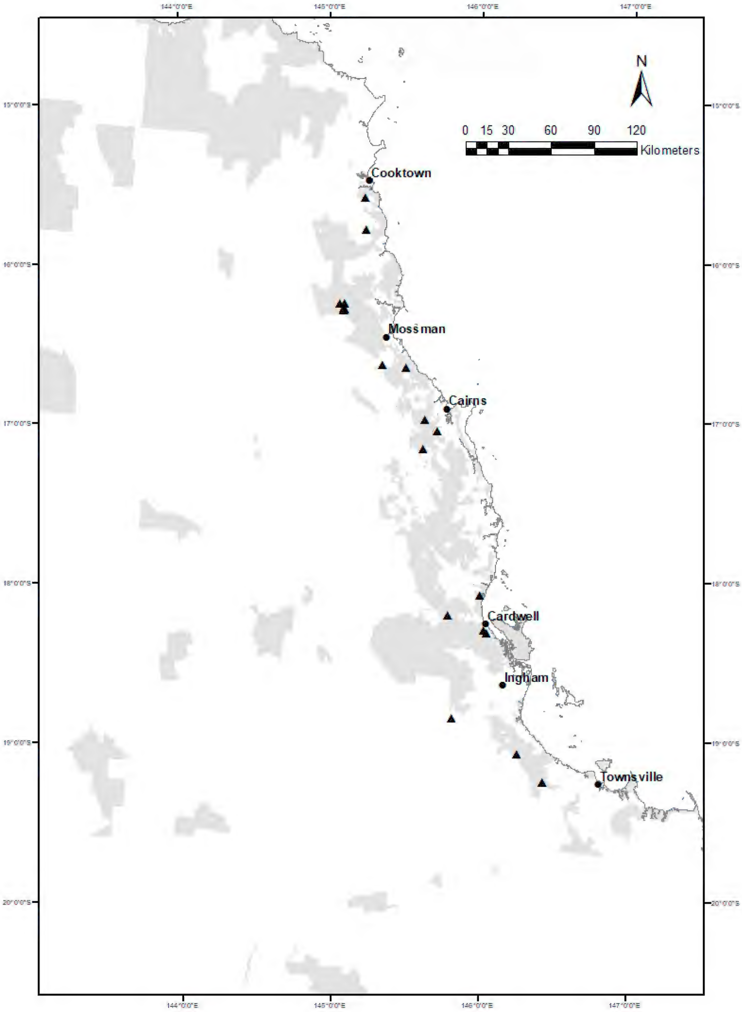


Map 1. Distribution of ***Denhamia trichoclada***. The shaded areas represent conservation reserves.



Map 2. Distribution of ***Elaeodendron bicolor***. The shaded areas represent conservation reserves.

Hibiscus cummingii Wannan (Malvaceae), a new species from north-east Queensland

Bruce S. Wannan[1]

Summary

Wannan, B.S. (2024). *Hibiscus cummingii* Wannan (Malvaceae), a new species from north-east Queensland. ***Austrobaileya* 14: 27–35.** The new species *Hibiscus cummingii* is described and illustrated. This species is restricted to the Hervey Range near Townsville with only a single population known. It is unusual amongst Australian *Hibiscus* (section: *Furcaria*) in having prominent nectaries on the calyx. The new species is illustrated with photographs, and notes are provided on how it differs from related species. A key is provided for *Hibiscus* section *Furcaria* in Queensland.

Key Words: Malvaceae; *Hibiscus*; *Hibiscus* section *Furcaria*; *Hibiscus cummingii*; *Hibiscus diversifolius*; *Hibiscus reflexus*; flora of Australia; flora of Queensland; new species; identification key

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Introduction

Hibiscus section *Furcaria* DC. is a speciose group in Australia with more than 30 species described (Wilson 1974; Wilson & Craven 1995; Wilson 2006; Craven *et al*. 2003, 2016; Badry *et al*. 2017; Wannan 2022). Species in this section are morphologically distinguished from other *Hibiscus* by the presence of a calyx with prominent thickened midrib and margins, and the frequent occurrence of aculeate trichomes (prickles) on stems, epicalyx and calyx (Hochreutiner 1900; van Borssum Waalkes 1966; Wilson 1994; Craven *et al.* 2003). Support for *Hibiscus* section *Furcaria* is also provided by genomic differences (Wilson 1994) and genetic sequence data (Pfeil *et al*. 2002; Hanes *et al*. 2024).

Hibiscus cummingii Wannan sp. nov. was recognised during recent investigations of *H.* section *Furcaria* collections at CNS by its prominent nectaries on a glabrous calyx. It is recorded from a single locality on the eastern slopes of the Hervey Range near Townsville. It is an upright, perennial shrub with large white flowers that grows amongst the granite boulders.

Materials and methods

Observations were made from herbarium specimens and living plants in cultivation at Speerwah near Cairns. The species description and comparisons with other species from *Hibiscus* Section *Furcaria* are based on herbarium specimens at BRI, CANB, CNS, MEL and NT. Seeds for scanning electron microscopy were mounted on stubs using double sided tape and were platinum coated. Micrographs were collected in secondary electron mode on a Hitachi SU5000 FE-SEM operating at 3kV accelerating voltage at the Advanced Analytical Centre, James Cook University in Townsville.

Length by width measurements are indicated as length × width mm. Dimensions are inclusive, i.e. 1.0–1.7 is given as 1–1.7. The terms *climax leaves* and *distal leaves* are used here, *sensu* Craven *et al.* (2003), to describe the larger, mid-stem leaves and upper, smaller leaves subtending the flowers, respectively. The term *pedicel* is used here to describe the stalk of a flower; however, in some cases, this is jointed and referred to as an *articulation*

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in species other than that described below, where it is *inarticulate*. This does not include the frequent abscission layer at the base of the pedicel near the subtending leaf axil.

Broad geographical abbreviations used in the text include NQ (north Queensland, i.e. Townsville region northwards to Cape York), CQ (central Queensland south of Townsville to approximately Rockhampton); SEQ (southeast Queensland).

Taxonomy

Hibiscus cummingii Wannan sp. nov.

Similar to other Australian *Hibiscus* section *Furcaria* species but differing by the following combination of characters: perennial shrub; calyx with prominent nectaries; inarticulate pedicels; upward facing large white flowers with a maroon throat, capsule with long simple hairs which overlie shorter simple hairs. **Type:** Australia. Queensland. NORTH KENNEDY DISTRICT: Hervey Range, near Townsville, 27 October 2010, *B.S. Wannan 7198* (holo: BRI [AQ1046838 comprising 2 sheets].

Cotyledons hypogeal, broad ovate, 15–18 × 16–19 mm, apex retuse, base rounded, 3-veined, glabrous on upper surface, simple hairs underneath; first leaves toothed, 33–40 × 24–30 mm, base cordate, apex acute, penniveined with basal veins extending halfway up lamina, hairs simple on upper and lower surfaces. Stem with simple hairs developing into aculeate hairs. **Perennial shrub** to 3 m tall, evergreen; stems up to 4 cm diameter developing light brown bark with lenticels in older plants. **Branchlets** green glabrous, very rarely with tubercle-based simple aculeate hairs on older branches. **Stipules** subulate, unlobed, eventually deciduous, glabrous, 3–6 mm long on climax leaves, up to 7 mm long on distal leaves subtending flowers. **Climax leaves** with petioles 25–60 mm long; pulvinus near lamina; mostly glabrous except for a dorsal line of fine non-aculeate simple and stellate hairs; occasionally with 1–5 simple aculeate hairs on older petioles; laminae either oblong to lanceolate and simple (100–160 × 30–50 mm), or 2 or 3 lobed with mid-lobes 130–200 × 50–60 mm, lateral lobe(s) 40–155 × 11–40 mm, lateral lobes 70% of the length of the mid-lobe; slightly discolorous; both surfaces glossy-satin with scattered aculeate hairs (simple & stellate) on midvein, side veins and laminae, sparse simple and stellate non-aculeate hairs below; foliar nectary at base 7–10 mm long, narrow elliptical; midvein raised with 10–20 pairs of side veins on central lobe or simple entire laminae, and 6–10 pairs on lateral lobes in trilobed laminae; margins serrate, teeth < 1 mm, spaced 3–8 mm; base mostly obtuse, rarely acute. **Distal leaves** with petioles 15–20 mm; pulvinus absent or barely observable; mostly glabrous except for a dorsal line of fine non-aculeate simple and stellate hairs; occasionally with 1–5 simple aculeate hairs on older petioles; laminae mostly unlobed, 70–140 (–180 in cult.) × 15–55 mm, lanceolate, slightly discolorous; foliar nectary up to 15 mm long, on lamina base and extending onto petiole, narrow elliptical; base acute to attenuate with indumentum as for climax leaves; midvein raised with 15–20 pairs of side veins; margins serrate, teeth < 1 mm, spaced 4–5 mm. **Flowers** solitary in axils, chasmogamous, 11–16 cm diameter, opening to face skywards, opening after midday (in cultivation) and lasting a single day. **Flower buds** up to 40 mm in length × 20 mm at the base, white streaked with mauve. **Pedicels** 10–35 mm long at anthesis, inarticulate, glabrous; 13–35 mm long in fruit. **Epicalyx** present, persistent, with 6–9 segments; segments at anthesis 18–25 mm long, sitting at 45° to the calyx, narrow triangular less than 2 mm wide, fused for *c*. 3 mm at the base, 2/3 length of calyx at anthesis, with up to 10 scattered simple aculeate hairs per segment. **Calyx** 20–30 mm long at anthesis, not splitting, 5-lobed with the lower ¼–⅕ fused, not adnate to the corolla and not falling with it after anthesis; lobes triangular with prominent marginal ribs and midrib, strongly keeled at the base, outer surface green with upper parts maroon, mostly glabrous (rarely with a few simple aculeate hairs *Cumming 22887*), inner surface with fine crinkled non-aculeate simple and stellate hairs to 1 mm on ribs and midrib, base of calyx with long simple non-aculeate hairs to 1.5 mm; apex acute; a single nectary per lobe 3–5 × 1 mm, sometimes reddish. **Petals** obovate, free to base, 90–100 × 65–70 mm, **strongly reflexed at anthesis**; inner surface white with 35–40 mm maroon basal eye-spot, pink streaks on the outside. **Staminal column** straight, *c.* 25 mm long, with capitate light maroon pollen clusters to 2 mm, up to the apex of the staminal column. **Style** *c.* 40 mm long, extending up to 15 mm beyond the end of the staminal column, mauve, 5-branched, each branch *c.* 3 mm long with a capitate stigma that is covered by fine maroon hairs to 0.7 mm; ovary 10 mm long, with appressed simple hairs to 1 mm. **Epicalyx in fruit** up to 15–25 mm, sitting at 90^0 to calyx (in fresh material). **Calyx in fruit** not distinctly inflated, 25–32 mm, distinctly longer than epicalyx. **Fruits** capsular, dry dehiscent, ovoid, 18–23 mm long, including *c.* 3 mm beak, with simple non-aculeate appressed hairs to 1.2 mm over much finer simple hairs to 0.2 mm; dehisced capsules with attenuate apices. **Seeds** 2 or 3 per locule, trigonous reniform, up to 5.5 × 4 mm, dark brown with low striate pattern and irregular groups of pectinate hairs. **Figs. 1–7.**

Additional specimens examined**: Queensland.** North Kennedy District: Hervey Range, May 2004, *Cumming 22887* (BRI); *ibid*, May 2007, *Cumming 24763* (BRI, CNS); *ex horto* Speewah, May 2023, *Wannan 7280* (CNS, NSW); *ibid*, Oct 2023, *Wannan 7305* (BRI, CNS, MEL, NSW, CNS); *ibid*, Nov 2023, *Wannan 7307* (CNS, DNA, MEL).

Distribution and habitat**:** *Hibiscus cummingii* is endemic to north Queensland and known only from the Hervey Range near Townsville where it occurs in a single population in open woodland dominated by *Blakella tessellaris* (F.Muell.) Crisp & L.G.Cook, *Eucalyptus platyphylla* F.Muell., *E. tereticornis* Sm. and *Lophostemon grandiflorus* (Benth.) Peter G.Wilson & J.T.Waterh. associated with large granite boulders.

Phenology**:** *Hibiscus cummingii* has been collected in flower in May and October. The flowering period at Speewah (*ex horto*) is between December and November.

Notes**:** *Hibiscus cummingii* differs from other species in *Hibiscus* section *Furcaria* by its combination of prominent nectaries on the calyx, large white corolla which is presented facing upwards, inarticulate pedicels, aculeate hairs rare on branches, petioles and pedicels, and perennial habit. The seeds of *Hibiscus cummingii*, with pectinate hairs and underlying low striate pattern, suggest an affinity with *Hibiscus heterophyllus* Vent.

Hibiscus cummingii is unique amongst north Queensland *Hibiscus* in always having large prominent nectaries (3–5 mm long) on the calyx. Calyx nectaries have been recorded for *Hibiscus diversifolius* subsp. *rivularis* (Bremek. & Oberm.) Exell (van Borssum Walkes 1966; Badry *et al.* 2017), but they are very small (less than 0.5 mm) and usually difficult to observe, being obscured by the dense calyx indumentum. Additionally, their occurrence is variable on calyx segment parts of the same flower and indeed varies from flower to flower. Perhaps as a consequence, calyx nectaries have not been included in the descriptions of this subspecies by Zich *et al.* (2020) or Cooper & Cooper (2004, as *H. diversifolius* Jacq.). Calyx nectaries have also been described for the yellow flowered southern subspecies: *Hibiscus diversifolius* subsp. *diversifolius* by some authors (Wilson 1974; Mitchell & Norris 2000), but not by others (Bentham 1863; Bailey 1901; Beadle 1982; Ross 1986; Wheeler 1987; Green 1994). Although somewhat more observable in this subspecies, they are also small (*c.* 0.5 × 0.2 mm) and obscured by hairs. Elsewhere in Australian species from *Hibiscus* section *Furcaria*, calyx nectaries occur only in *H. reflexus* Craven, F.D.Wilson & Fryxell (from the Kimberley) and the occasionally naturalised Rosella (*H. sabdariffa* L.). *Hibiscus cummingii* differs from *H. reflexus* by its infrequent aculeate hairs on stems, longer stipules, longer and thinner leaves, much larger epicalyx, externally glabrous calyx, and much larger corolla.

The identification key below relies on patterns of seed morphology in Queensland species. Seed morphology has been shown to be diagnostically useful in recognising *Hibiscus* species as well as genera within the Malvaceae (Mwachala 2009; Abid *et al.* 2016; Ilakiya & Ramamoorthy 2021; Khalik *et al.* 2021). Investigations as part of this study suggest that there are three main

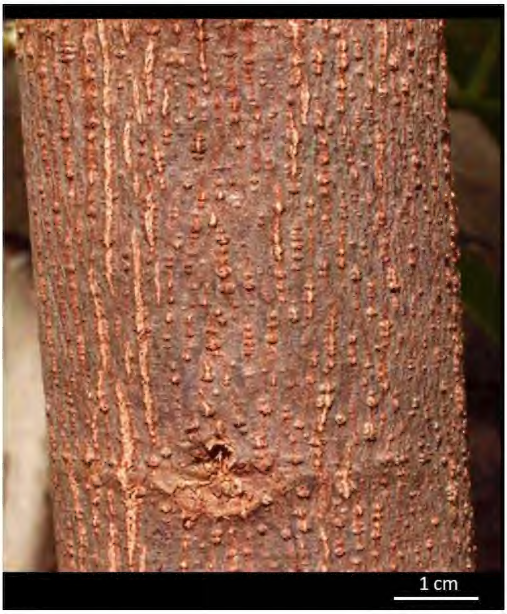

Fig. 1. ***Hibiscus cummingii***. Stem showing bark (*Wannan 7307*). Photo: B.S. Wannan.

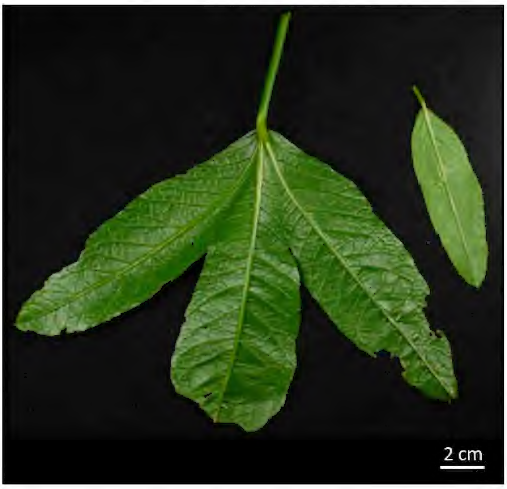

Fig. 2. ***Hibiscus cummingii***. Abaxial surface of climax and distal leaf with nectaries (*Wannan 7280*). Photo: B.S. Wannan.

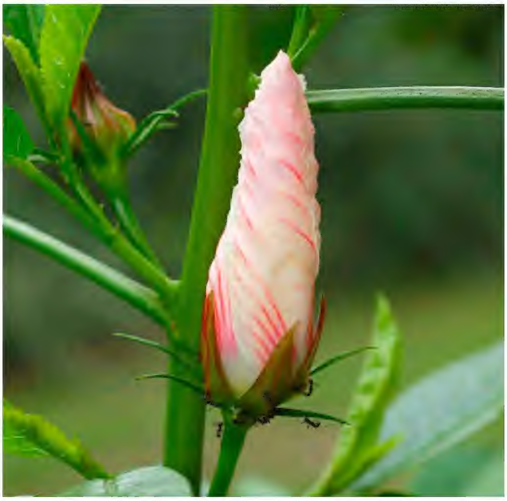

Fig. 3. ***Hibiscus cummingii***. Flower bud with ants at calyx nectaries (*Wannan 7280*). Photo: B.S. Wannan.

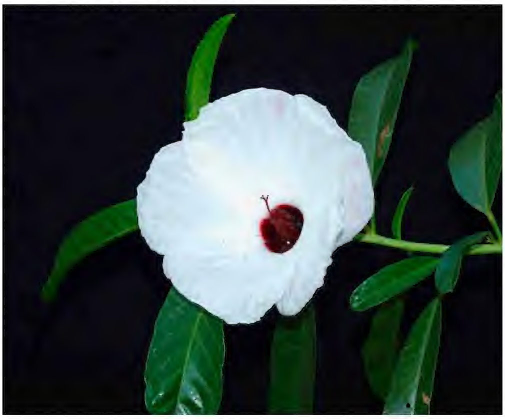

Fig. 4. ***Hibiscus cummingii***. Flower at anthesis showing stamens, extended style and maroon eye spot (W*annan 7305*). Photo: B.S. Wannan.

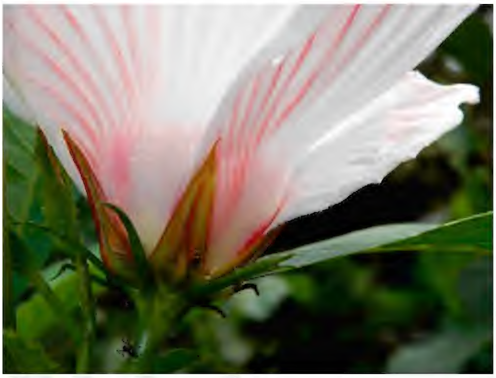

Fig. 5. ***Hibiscus cummingii***. Flower at anthesis showing calyx, epicalyx, pedicel (*Wannan 7305*). Photo: B.S. Wannan.

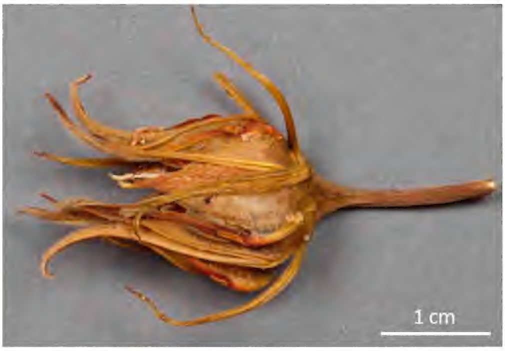

Fig. 6. ***Hibiscus cummingii***. Fruiting capsule (*Wannan 7198*). Photo: B.S. Wannan.

species groups evident from seed morphology in Australian taxa of section *Furcaria* (**Fig. 7A–H**), namely: the *H. meraukensis* Hochr. group (with *H. graniticus* Wannan and *H. saponarius* Craven) whose seeds are characterised by a caruncle and pectinate hairs, the *H. diversifolius* group which is characterised by smooth non-carunculate seeds, and the *H. heterophyllus* group (with *H. cummingii*, *H. divaricatus* Graham, *H. forsteri* F.D.Wilson, *H. sankowskyorum* Craven, *H. splendens* C.Fraser ex Graham, *H. townsvillensis* Craven, *H. zonatus* F.Muell.) which are characterised by non-carunculate seeds with pectinate hairs. Pectinate hairs refers to the comb-like hairs on the seed (**Fig. 7B, 7D & 7F**).

Conservation status: *Hibiscus cummingii* has a restricted distribution on the Hervey Range with an estimated population size of fewer than 1,000 individuals in a single population that has an area of occupancy of less than 20 km^2 (IUCN 2012). Further survey work is required to ascertain the actual extent of occurrence for the species, together with a formal conservation status listing.

Etymology: The Latin species epithet honours the Townsville botanist Russell Cumming (b. 1959) who first collected this species.

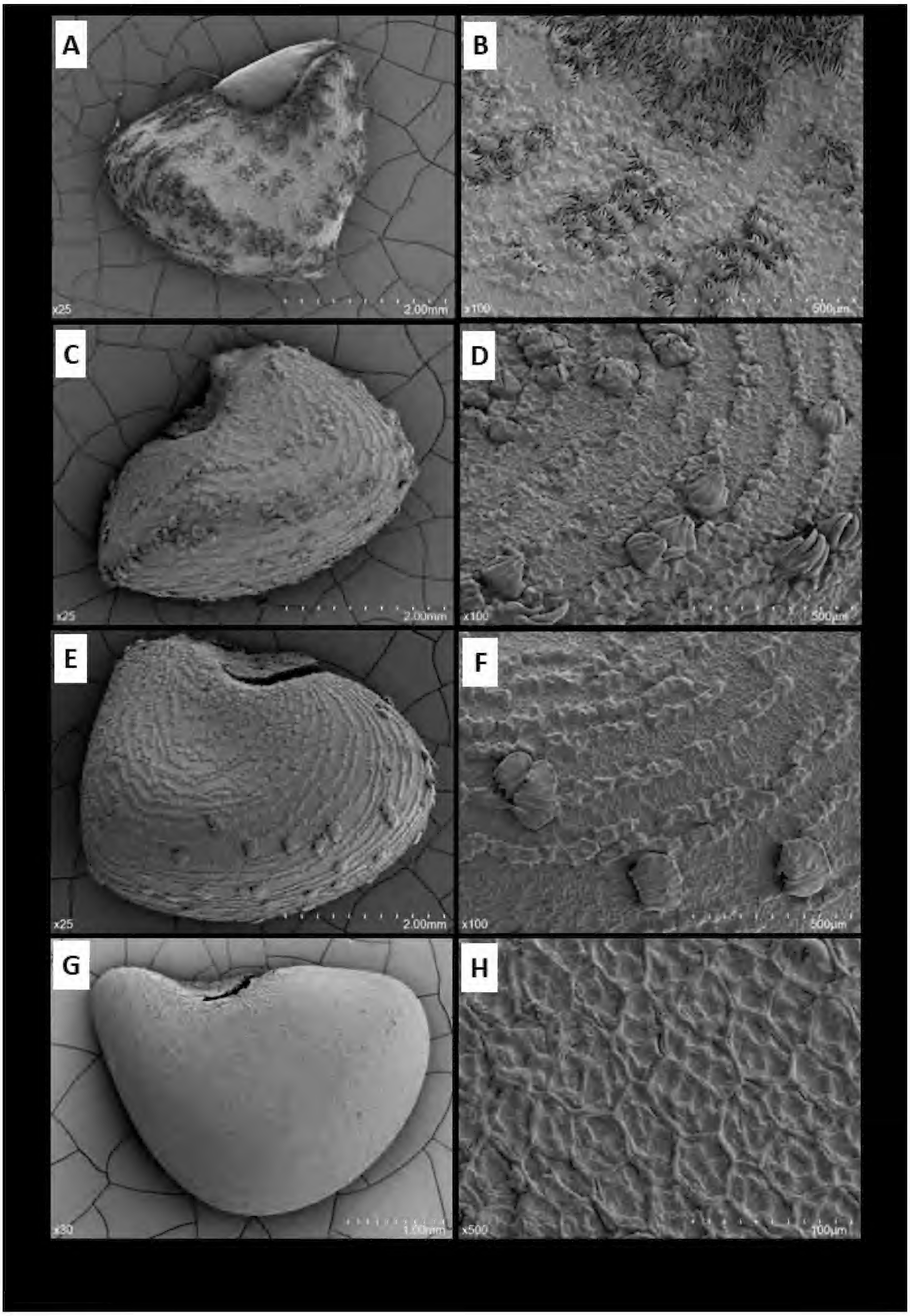

Fig. 7. Seeds in Australian ***Hibiscus*** sect. ***Furcaria***. **A & B.** Seed with caruncle, pectinate hairs, lineate ridges (***H. saponarius***: *Clarkson 7181* CNS). **C & D.** Seed without caruncle with pectinate hairs and lineate ridges (***H. divaricatus***: *Wannan 7275*, CNS*)*. **E & F.** Seed without caruncle with pectinate hairs and lineate ridges (***H. cummingii***: *Wannan 7305*, CNS). **G & H.** Seed smooth without caruncle, and no pectinate hairs (***H. diversifolius* subsp**. ***rivularis***: *Gray 5886*, CNS). Photos: K. Blake.

Key to taxa in *Hibiscus* section *Furcaria* for NSW & Qld

1 Capsule with two layered indumentum, seeds without caruncle, plants growing in forest margins **2**
1. Capsule with layer of simple hairs or glabrous, seeds with caruncle (**Fig. 7A & B**), plants growing in savanna habitats. **3**

2 Plants above two metres in height, pollen maroon, seeds with pectinate hairs and obvious lineate ridges (**Fig. 7C–F**) **5**
2. Plants below two metres in height, pollen yellow, seeds smooth without pectinate hairs (**Fig. 7G & H**) **13**

3 Perennial shrub to 2.5 metres with pink flowers, inarticulate pedicels, no stellate hairs . . . . **Hibiscus graniticus**
3. Annual shrub to 1.5 metres with white flowers, articulate pedicels, stellate hairs on leaves, pedicels and calyx **4**

4 Climax leaves up to 18 × 18 cm, leaf nectary present, epicalyx 6–22 mm, pedicels 10–20(–30) long; stems, petioles, pedicels and calyx with coarse, simple aculeate hairs to 1.5 mm long . . . . **Hibiscus meraukensis**
4. Climax leaves up to 7 × 11 cm, leaf nectary mostly absent, epicalyx 9–12mm, pedicels 23–85 mm long; stems, petioles, pedicels and calyx with simple non-aculeate hairs to 3 mm long . . . . **Hibiscus saponarius**

5 Corolla yellow. **6**
5. Corolla white or pink **7**

6 Distal leaf lamina (under flowers) linear to narrow-lanceolate (length/breadth: 8–14), with petiole 5–10 mm and 22+ side veins either side of midrib, side veins 60–90 degrees; calyx with aculeate simple hairs; capsule 16–21 mm long. . . . . **Hibiscus divaricatus**
6. Distal leaves (under flowers) lanceolate, (length/breadth: 5–8), with petiole 10–20 mm and 12–20 side veins either side of midrib, side veins 45–60 degrees; calyx without aculeate simple hairs; capsule 20–30 mm long . . . . **Hibiscus heterophyllus NQ**

7 Climax leaves deeply lobed, greater than 2/3 leaf length . . . . **Hibiscus heterophyllus SEQ to NSW**
7. Climax leaves not lobed or lobes less than 2/3 the leaf length **8**

8 Capsule with non-aculeate simple hairs (to 1.2 mm), **but no** underlayer of fine stellate hairs, pedicels not articulate **9**
8. Capsule with non-aculeate simple hairs (to 2.5 mm) over a shorter finer layer of stellate hairs, pedicels articulate **10**

9 Calyx with prominent nectaries, distal leaves (subtending flowers) with 8–20 side veins either side of midrib, stem mostly glabrous, capsule 18–23 mm long . . . . **Hibiscus cummingii**
9. Calyx without nectaries, distal leaves (subtending flowers) with 5 or 6 side veins either side of midrib, stem with stellate aculeate and non-aculeate hairs, capsule 14–18 mm long. **Hibiscus zonatus**

10 Leaf nectary absent; stems, petioles and leaves covered by dense stellate non-aculeate hairs, velvet-like . . . . **Hibiscus splendens**
10. Leaf nectary present; stems with simple and stellate aculeate hairs; petioles with only dorsal line of simple and stellate non-aculeate hairs; leaves with scattered stellate hairs **11**

11 Evergreen tree, branches with aculei which are tipped with a single hair, pedicels 45–60 mm . . . . **Hibiscus townsvillensis**
11. Deciduous or evergreen shrub, branches with aculei which are tipped by stellate hairs, pedicels 13–38 mm **11**

12 Evergreen shrub, growing on granite substrates; staminal column *c.* 45 mm long . . . . **Hibiscus sankowskyorum**
12. Deciduous shrub, growing on sandstone substrates; staminal column 20–30 mm long. . . . . **Hibiscus forsteri**

13 Flowers purple, NQ . . . . **Hibiscus diversifolius subsp. rivularis**
13. Flowers yellow, CQ to NSW . . . . **Hibiscus diversifolius subsp. diversifolius**

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Resolution of the taxonomic identity of *Cryptocarya daruensis* Kosterm. and lectotypification of *C. ilocana* S.Vidal (Lauraceae)

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Summary

Forster, P.I. (2024). Resolution of the taxonomic identity of *Cryptocarya daruensis* Kosterm. and lectotypification of *C. ilocana* S.Vidal (Lauraceae). ***Austrobaileya* 14: 36–39.** *Cryptocarya daruensis* Kosterm. (as '*darusensis*'), described from southern Papua New Guinea and known only from the type collection, is reduced to synonymy under the widespread *C. exfoliata* C.K.Allen. A lectotype is chosen for the name *C. ilocana* S.Vidal described from the Philippines.

Key Words: Lauraceae; *Cryptocarya*; *Cryptocarya daruensis*; *Cryptocarya darusensis*; *Cryptocarya exfoliata*; *Cryptocarya ilocana*; new synonymy; lectotypification; flora of Australia; flora of New Guinea; flora of Northern Territory; flora of the Philippines; flora of Queensland

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Introduction

Cryptocarya daruensis Kosterm. (as '*darusensis*') was described from a fruiting specimen (*Ridsdale NGF33749 & Galore*) collected on Daru Island in the Torres Strait, Western (Fly) Province, Papua New Guinea (Kostermans 1990). The species has remained an enigma with no further collections referring to the name within herbaria. Brief descriptions in Latin and English were provided, but no suggestions of affinities (Kostermans 1990). In 1976 André Kostermans (b. 1906, d. 1994) had annotated the collection at Leiden later used as the holotype as "Cryptocarya daruensis Kosterm." and "near C. cunninghamii [but] tomentum different". The published spelling of the species name appears to be an error, and the holotype is accessioned at Leiden as *Cryptocarya daruensis*.

Location and subsequent examination of an isotype for *Cryptocarya daruensis* at BRI immediately raised the possibility that it was conspecific with a widespread species, namely *C. exfoliata* C.K.Allen, also typified from a collection in southern Papua New Guinea in the Western (Fly) Province (Allen 1942). *Cryptocarya exfoliata* was first recognised to occur in both Australia and southern Papua New Guinea by Dunlop (1987), with a comprehensive account provided by Hyland (1989) in his review of the Australian laurels.

Cryptocarya exfoliata was referred to the synonymy of *C. ilocana* S.Vidal (based on a type collection from the Philippines), and its presence in Australia was noted by Kostermans (1969), based upon an apparently unnumbered collection by S.F. Kajewski. Hyland (1989) did not refer to the synonymy proposed by Kostermans (1969) and perhaps the only likely candidate for the Kajewski collection (based on location and habitat) is his *1399* from the Daintree River (identified by Hyland as *C. triplinervis* var. *riparia* B.Hyland).

The type collection of *Cryptocarya ilocana* (*Vidal 1684*) is represented in numerous herbaria and comprises a fruiting specimen. All of the material is strongly triplinerved and some duplicates were determined as *C. triplinervis* R.Br. by Kostermans in the 1960s; however, Hyland (1989) and Le Cussan & Hyland (2007) considered *C. triplinervis*

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to be endemic to Australia. The fruits on the Vidal collection are ellipsoidal. Hyland (1989) and Le Cussan & Hyland (2007) describe the fruit of *C. exfoliata* as globular to ellipsoidal (though they are most commonly globular), and of *C. triplinervis* as globular to ellipsoidal. Smith (1978) "was somewhat startled to note that Kostermans in 1967 had annotated a few Fijian specimens at K as representing the Philippine *C. ilocana* Vidal". In the absence of a monograph of *Cryptocarya*, it is difficult to evaluate Kostermans' identification decisions based on these limited collections; however, based on examination of *Vidal 1684* there appears to be a closer relationship with *C. triplinervis* rather than *C. exfoliata*. The name *C. ilocana* requires lectotypification due to the existence of multiple type elements (see below).

The numerous collections in Australian herbaria that are now identified as *Cryptocarya exfoliata* had usually been initially identified as *C. cunninghamii* Meisn. or *C. triplinervis* prior to the revision by Hyland (1989). An initial molecular analysis of Australian *Cryptocarya* R.Br. species and their relationships did little to reveal the inferred phylogeny of *C. exfoliata* (based on a single sample), as it was placed in a largely unresolved polytomy with samples identified as *C. bidwillii* Meisn., *C. clarksoniana* B.Hyland and *C. sclerophylla* B.Hyland (van der Merwe *et al.* 2016). *Cryptocarya daruensis* is newly reduced to synonymy under *C. exfoliata* in this note and the *status quo* of the earlier name is maintained in the absence of a modern monograph that resolves regional approaches to naming in the genus.

Materials and methods

Field observations and collections of *Cryptocarya exfoliata* were made in far northern Queensland, together with examination of herbarium collections at BRI, and perusal of online images (indicated * in specimen citations) via the JSTOR Global Plants Online portal. Herbarium locations for unseen distributed duplicates of cited collections are listed in alphabetical order after those seen and separated from the former by a semi-colon (e.g. BRI; DNA, MEL).

Taxonomy

Cryptocarya exfoliata C.K.Allen, *J. Arnold Arbor.* 23(2): 135 (1942). **Type:** Papua New Guinea: WESTERN (FLY) PROVINCE: Middle Fly River, Lake Daviumbu, September 1936, *L.J. Brass 7655* (holo: A 00041398*; iso: BM 000799346*, BO 1267416*, BRI [AQ0340510], L 0036287*).

Cryptocarya daruensis Kosterm., *Bot. Helv.* 100(1): 33 (1990), as 'darusensis'; **synon. nov. Type:** Papua New Guinea: WESTERN (FLY) PROVINCE: Daru Island, 20 August 1967, *C.E. Ridsdale NGF33749 & M. Galore* (holo: L 0036100*; iso: A 02538511*, BRI [AQ0164477]; BO, CANB, K).

[*Cryptocarya ilocana auct. non* S.Vidal.: Kostermans (1969: 469), *pro parte*]

***Illustrations*:** Cooper & Cooper (2004: 249); Zich *et al.* (2020).

Comprehensive botanical descriptions of this species can be found in Hyland (1989) and Le Cussan & Hyland (2007).

***Additional selected specimens examined*: Papua New Guinea.** WESTERN (FLY) PROVINCE: Lower Fly River, east bank opposite Sturt Island, Oct 1936, *Brass 8175* (A*, BRI); Wando, May 1993, *Waterhouse BMW2896* (BRI; LAE). **Australia. Northern Territory.** Between the East Alligator River and Oenpelli, Arnhem Land, Jun 1974, *Pullen 9460* (BRI; CANB); East Alligator River, *Dunlop 7618* (BRI; CANB, CNS, DNA, NSW); 6 km S of Mt Gilruth, Arnhem Land, Mar 1984, *Jones 1535* (BRI; AD, CANB, DNA, K, L, MEL, NSW); Deaf Adder Gorge, Apr 1980, *Dunlop 5469* (BRI; CANB, CNS, DNA); NW Arnhem Land, Gumardin Falls, Nov 1987, *Russell-Smith 3903 & Lucas* (BRI; DNA). **Queensland.** COOK DISTRICT: Dauan Island, Torres Strait, Jun 2003, *Wannan 3155 & Buosi* (BRI; NSW); Gebar Island, Oct 2017, *Fell GB72 et al.* (BRI); Lockerbie, 10 miles [16.6 km] WSW of Somerset, Apr 1948, *Brass 18391* (BRI); Heathlands, QPWS Ranger base pumphouse, tributary of Bertie Creek, Jun 2008, *Forster PIF33723* (BRI, MEL, NSW); 1 km NW of Bolt Head, Temple Bay, Jul 1991, *Tucker s.n.* (BRI [AQ508349], CNS, DNA); Stone Crossing on Wenlock River, Oct 1983, *Gunness AG1829* (BRI); Wattle Hills, Pascoe River, Sep 2002, *Sankowsky 1842 & Sankowsky* (BRI); Round Mountain, Embley Range, Silver Plains, Jun 1998, *Forster PIF23094 et al.* (BRI, CNS, DNA, MEL); Upper Massey Creek, *c.* 15 miles [*c.* 24 km] S of ENE of Coen, Oct 1962, *Smith 11708* (BRI); T.R. 14 Massy, Nov 1980, *Hyland 10870* (BRI; CNS); Jane Table Hill, 46.5 km N of Lakefield homestead, Lakefield National Park, Mar 1993, *Fell DGF2948 & Stanton* (BRI); King's Plains Station, Sackley Hill, Jan 2014, *McDonald KRM15145 &*

Roberts (BRI); White Cliff Point, Cook Highway, Dec 1984, *Gray 3828* (BRI; CNS); S of Buddabadoo Creek, Yarrabah, Oct 2013, *Jago 7644 & Stanton* (BRI).

***Distribution and habitat*:** *Cryptocarya exfoliata* is widespread in drier rainforest, gallery and back mangal, closed forest communities (variously beach scrub, riparian scrub, semi-evergreen microphyll vinethickets, semi-evergreen notophyll to mesophyll vineforests) on a variety of substrates (latosols, sands, usually derived from granites). The species is known from southern Papua New Guinea in the Western (Fly) Province, and in northern Australia from the top end of the Northern Territory and in Queensland from the Torres Strait south to near Cairns and Yarrabah in the Wet Tropics. It is the most commonly collected species of *Cryptocarya* from the Torres Strait islands.

***Notes*:** Allen (1942) noted that her new species "falls into the triplinerviate group, although some individual leaves are penninerved". Hyland (1989) observed that *Cryptocarya exfoliata* exhibited leaf laminae that were "usually triplinerved but sometimes penninerved even on the same specimen". Cooper & Cooper (2004) stated leaves in the species were "3-veined or [had] 2–9 pairs lateral veins", with illustration of a triplinerved leaf lamina. The type collection of *C. daruensis* is variable in this character, with leaves of the BRI isotype nearly entirely penninerved, whereas the A isotype shows both triplinerved and penninerved laminae. This character is indeed quite variable when a wide range of collections are examined, with triplinerved laminae being more commonly observed; however, this variation is not mentioned or described in online identification tools where mainly triplinerved laminae are illustrated (Zich *et al.* 2020; ALA 2024).

Cryptocarya ilocana S.Vidal, *Revis. Pl. Vasc. Filip.* 223 (1886). **Type citation:** "1684 Pr. Ilocos Norte (N. v. *Camigay.*)". **Type:** [Philippines.] [Pr.] Ilocos Norte, *s.dat.*, [*S.*] *Vidal 1684* (lecto [here designated]: MA 397175*; isolecto: A 00041445*, K 000768477*, L 0036284*, MA 395818* [2 sheets]).

***Typification*:** The history of Sebastián Vidal and his plant collections from the Philippines has been reviewed by Calabrese & Velayos (2009) who noted that the first set of the collections at Manila (PNH) were destroyed by fire in 1897 and that the second set is in Madrid (MA). Following study of the MA collections by Quisumbing in the 1950s, duplicates were distributed to other herbaria such as A, K and L; these specimens are usually accompanied by an extra label acknowledging this. While there is a clear citation of a type collection for *Cryptocarya ilocana* (Vidal 1886), there is no direct indication of an herbarium of deposition, although this would have been PNH at the time. Kostermans (1969: 469) cited "typus: *Vidal 1684* (K, L)" but did not thus effect lectotypification. Quisumbing subsequently annotated the L sheet as a "TYP. DUPL." and other sheets are variously labelled as "TYPE" or "ISOTYPE" but since these designations are unpublished they have no standing. There are two accessions of *Vidal 1684* at MA; the better specimen with abundant fruit is selected as lectotype for the name, with the other specimens in MA and elsewhere being isolectotypes. The word *Camingay* in the protologue refers to a local name for the species (*nom. vern.*) and is not further locality data.

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